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Graduate Students' Views on Information Literacy

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Declaration

I certify that all material in this dissertation which is not my own work has been properly identified and that no material is included for which a degree has previously been conferred upon me.

..... (Signature of candidate)

Oware Wilfred Daniel (submitted electronically)

Dedication

This thesis is dedicated to my lovely and loving wife Mrs Adelaide Oware, and our families.

I love you all.

Acknowledgements

To God be the Glory.

I am highly indebted and equally grateful to all the people who helped in one way or another to make this thesis a success.

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Abstract

The purpose of this study is to examine graduate students' views on information literacy with the aim of understanding their opinions and experience about some aspects of information literacy and its importance in academic work or research, and also to ascertain the sources of information graduate students use most.

Mixed methods of both quantitative and qualitative approaches were used, combining online survey and face-to-face interviews to examine graduate students' views and experiences with information literacy; their opinions about the importance of information literacy in their academic work or research, their opinions about the best approach for teaching information literacy, and also which sources of information graduate students use most for their academic work or research.

The findings of this study show graduate students rely heavily on the internet for their academic work or research. They agree that information literacy is very important and helpful in academic work and research and they suggest that information literacy education should be embedded in the curriculum and it should also be introduced early in education to make it more effective. They also call for collaboration between librarians and faculty to facilitate the implementation of information literacy programmes.

The study presents a viewpoint of graduate students in Digital Library Learning programme and provides some insights into graduate students' knowledge about the concept of information literacy, and the importance they attach to information literacy education.

Keywords: Information Literacy Education, Graduates Students, Curriculum.

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LIST OF ABBREVIATIONS

ACRL	Association of College and Research Libraries
AILS	Australian Information Literacy Standards
ALA	American Library Association
ANZIIL	Australia and New Zealand Institute for Information Literacy
BA	Bachelor of Arts
BL	Bachelor in Librarianship
BLIS	Bachelor in Library and Information Science
BSc	Bachelor of Science
CILIP	Chartered Institute of Library and Information Professionals
DILL	Digital Library Learning
IL	Information Literacy
MA	Master of Arts
ML	Master of Law
MLS	Master of Library Science
MLIS	Master of Library and Information Science
MPhil	Master of Philosophy
MSc	Master of Science
PC	Personal Computer
SCONUL	Society of College, National and University Libraries

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CHAPTER 1: INTRODUCTION

This research examines the views of graduate students on information literacy. According to Williams and Wavell (2007), “Information literacy implies a confidence and ability to draw on a range of strategies at a variety of cognitive levels and an ability to be creative and flexible enough to adapt to ever-changing contexts as well as the dynamic process of interpreting and transforming information into new knowledge” (p.200). Bruce (2004) also makes an important observation about information literacy as she notes that:

“Information literacy is conceivably the foundation for learning in our contemporary environment of continuous technological change. As information and communication technologies develop rapidly, and the information environment becomes increasingly complex, educators are recognizing the needs for learners to engage with the information environment as part of their formal learning processes. Information literacy (IL) is generally seen as pivotal to the pursuit of lifelong learning, and central to achieving both personal empowerment and economic development” (p.8).

It is further stated by Bruce (2004) that information literacy education is the catalyst needed for the transformation of the information society of today into the learning society of tomorrow.

1.1. Background to the Research

Bruce (2002) notes that the beginning of the 21st century has been called the information age because of the explosion of information output and information sources. Information literacy has emerged with the advent of information technologies and grown to become recognized as the critical literacy for the twenty-first century. Currently, information literacy is inextricably associated with information practices and critical thinking in the information and communication technology environment. Information literacy has been an area of increasing interest to librarians and information professionals since 1974 and there is a large volume of literature covering various aspects of the topic (Virkus, 2003).

As a matter of fact, students should be equipped with competencies that will enable them to know how to learn, how to evaluate the information they find for accuracy, how to organize information, and finally how to use the information to accomplish given tasks and meet daily information needs. The most generally accepted definition of information literacy is the one

given by the American Library Association (ALA) in 1989. It states that “To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information” (ALA, 1989, Definitions section, para. 3).

A study undertaken by Mittermeyer and Quirion (2003) on the information literacy level of first-year undergraduate students in Quebec, discovered that deficiency in information literacy skills has a negative impact on academic achievements, as well as personal and professional development. In the same study, a number of important factors that influence the quality of academic work were identified as:

1. Difficulty in retrieving relevant information. This is as a result of students’ inability to identify concepts and to read citation; a lack of knowledge of the structure and contents of library catalogues and of controlled vocabulary.
2. Inefficient use of time arising out of students’ experimenting with different search engines without success. This leaves students with little time to read and to integrate new information into their knowledge base, and to complete their assignments.
3. Risk of plagiarism due to a lack of knowledge of the principles of ethical use of information and particularly the use of citations. (Mittermeyer and Quirion, 2003, p.7).

The subsequent sections explain the research problem, objectives and the research questions this study aims to address.

1.2. Research Problem

Information literacy has become very essential in our world today because of the increasing variety and volumes of information resources. Users are confronted with abundant and varied information choices in their studies, at the workplace, as well as in other areas of life, so “the quality, authenticity, validity and reliability of some of the materials in electronic format via the internet cannot be guaranteed” (Association of College and Research Libraries, as cited in Idiodi, 2005, p.225).

Information literacy is particularly necessary at the higher education level where universities are expected to produce highly skilled graduates with a capacity for life-long, critical, conceptual and reflective thinking. As a result, it is increasingly necessary, in the information

society of today that post-graduate students become information literate and have the knowledge and skills to find and evaluate relevant information. “Hard-pressed students (both undergraduate and post-graduate) attempt to find information quickly and easily through search engines and often they feel they succeed”, so “this leads students to assume they know how to find good quality information and makes them reluctant to invest time in learning how to conduct information search properly” (Stubblings and Franklin, 2005, p.94).

It is against this background that this research seeks to examine graduate students’ views on information literacy in order to better understand and facilitate the development of information literacy.

1.3. Research Objectives and Research Questions

The research will be carried out under the following objectives:

- a. To examine the views of graduate students on information literacy.
- b. To find out graduate students’ opinions about the significance of information literacy education and training.
- c. To ascertain graduate students’ most preferred sources of information and why they use them.

The research will also try to answer the following questions:

1. How do graduate students perceive information literacy?
2. What opinions do graduate students have about the significance of information literacy education and training?
3. Which kind of information sources are used by graduate students and why?

1.4. Justification for the Research

Information literacy has been defined differently by various authors, associations and organisations. Similarly, there are different views about its significance in education and other disciplines. This research seeks to establish the extent to which the concept of information literacy is understood by Digital Library Learning (DILL) graduate students. DILL is a two-year master’s programme for information and library professionals as part of the European Union Erasmus Mundus Master’s programmes. It is offered in partnership by

three universities, namely by Oslo University College (Norway), Tallinn University (Estonia), and the University of Parma (Italy). The DILL course aims at enhancing knowledge and skills in the field of digital libraries. DILL graduate students were selected as the sample for this study to better understand their views on information literacy and therefore help embed the development of these competencies into the DILL programme. No previous study has been done seeking to understand DILL students' views on information literacy.

1.5. Methodology

This research used a mixed method research approach. Both quantitative and qualitative methods for data collection and subsequent analysis were used. Data for this research came from both primary and secondary sources. Secondary sources of data included previous works such as reports, books, journals, magazines, electronic sources and other related materials. The primary data was collected using two different data collection instruments; online questionnaires comprising both open-ended and close-ended questions designed on issues directly related to the objectives of the research and qualitative interviews with some of the respondents to get additional information as well as in-depths views on the topic being researched. Both deductive and inductive analyses were used to analyze the collected data. Patton (1990) argues that inductive analysis means that the patterns, themes, and categories of analysis come from the data; they emerge out of the data rather than being imposed on prior to data collection and analysis.

1.6. Definitions of Terms

This section gives definitions of basic terms used in this research.

Information literacy: information literacy is assumed to be the knowledge and skills necessary to correctly identify information needed to perform a specific task or solve a problem, cost-efficiently search for information, organize or reorganize it, interpret and analyze it once it is found and retrieved (e.g. downloaded), evaluate the accuracy and reliability of the information, including ethically acknowledging the sources from whence it was obtained, communicate and present the results of analyzing and interpreting it to others if necessary, and then utilize it for achieving actions and results (Lau 2006, p.17).

Curriculum: The subjects that students study at a particular school or college.

1.7.Delimitations of Scope

There were some delimitations in the scope of the research. These were identified as follows:

- Respondents were drawn from a sample made up of only DILL graduate students, though the pilot study covered other graduate students apart from DILL graduate students.
- The literature review was not extensive; therefore all the aspects of the concept of information literacy were not covered.
- Due to the small nature of the sample size of the respondents, the findings of the research cannot be generalized as a common phenomenon for a big population.

1.8. Outline of the Thesis

The research is organised into five chapters with chapter one covering the main introduction, background to the research, the research problem, research objectives and research questions, justification for the research, followed by the methodology, definitions of basic terms used in the research, the delimitations of scope of the research, outline of the thesis, and a short conclusion of the salient points raised in the chapter. Chapter two covers the literature reviewed for the research, giving an overview of information literacy relevant for this study. Chapter three covers the methodology with all the related aspects, and also describes both the theoretical framework and theoretical perspective for the research. It also includes the sampling strategy and the techniques used. The research design, area of study, data collections methods, research instruments, a brief description of data analysis and presentation, pilot study, and research limitations are also covered in this chapter. Chapter four covers the data analysis as well as the presentation and discussion of findings. The conclusion of the research and recommendations are given in chapter five.

1.9. Conclusion

Chapter one has provided the background for the research, with a brief introduction about the research as a whole and what will be discussed in subsequent chapters. It states the problem and equally gives the justification for doing the research. In short, a general overview of the research has been elaborated, and the immediate chapter will review related literature.

CHAPTER 2: LITERATURE REVIEW

This chapter presents an overview of the concept of information literacy, looking at the various definitions, models, and standards of information literacy. The need for information literacy education, integration of information literacy into curriculum, and the preferences of information sources by students were also discussed. The literature reviewed did not cover all the various aspects of the concept of information literacy, but only those related to the topic of this study. Searches were conducted in online databases like Emerald, ERIC, LISTA, and E-journal, through EBSCOHOST, and in other search engines like Google Scholar using the following terms “information literacy education”, “curriculum”, and “graduate students”. Various books, magazines, and journals on information literacy, as well as organisational websites like CILIP¹, were also consulted to get different views on the topic. Only articles and other materials written in English language were consulted. Originally, there was no range limit in terms of dates for materials retrieved, but in order to get current information on the topic, the search was later narrowed to materials ranging between 2000 and 2010. As a result, only few materials related to the topic were retrieved.

2.1. Overview of the Concept of Information Literacy

Various definitions, concepts, models and standards of information literacy have been presented by different authors, and information organisations and associations (Bawden, 2001; Virkus, 2003; Armstrong, 2005). For example, according to Williams and Wavell (2007), “Descriptions of information literacy take the form of differing interpretations, frameworks illustrating the information process, lists of attributes or skills, or models designed to support the development of information literacy” (p.200). For Kinengyere (2006), being information literate “requires knowing how to clearly define a subject or area of investigation; select appropriate terminology that expresses the concept under investigation; formulate a search strategy that takes into consideration different information sources and the various ways information is organized; analyze the data collected for value, relevancy, quality and suitability; and subsequently turn them into knowledge” (p.329).

¹ The Chartered Institute of Library and Information Professionals is the leading professional body for librarians, information specialists and knowledge managers. See <http://www.cilip.org.uk/professionalguidance/informationliteracy/definition/>

However, the most widely spread definition comes from the American Library Association (ALA). The ALA (1989) definition states that to be information literate an individual “must recognise when information is needed and have an ability to locate, evaluate and use effectively the information needed. Ultimately information literate people are those who have learned how to learn. They know how to learn because they know how information is organised, how to find information and how to use information in such a way that others can learn from them” (p.1). To emphasise this fact, the ALA (1989) report again called for a revamping of the learning process itself, rather than of any particular curriculum, ensuring that students were competent in six general areas which are “recognising a need for information; identifying what information would address a particular problem; finding the needed information; evaluating the information found; organising the information; using the information effectively in address the specific problem”.

Several other organisations and institutions have developed their definitions of information literacy. For example, the Australian Information Literacy Standards (AILS) developed by by Australia and New Zealand Institute for Information Literacy (ANZILL) in 2004 identifies an information literate person as one who has learnt how to learn and is capable of recognising the need for information and determining the extent of the information needed; accessing the needed information efficiently and effectively; evaluating the information and its sources and incorporating selected information into his or her knowledge base and value system; using information effectively in order to accomplish a purpose; understanding the economic, legal, social and cultural issues in the use of information; accessing and using information ethically and legally; classifying, storing, manipulating and re-drafting information collected or generated; recognising information literacy as a prerequisite for life-long learning (CAUL, 2001).

On the other hand, the Society of College, National and University Libraries (SCONUL) (2004) proposed a model of information literacy popularly known as the seven pillars of information literacy. This model outlines the following components of information literacy: recognising information need; distinguishing ways of addressing information gap; constructing strategies for locating information; locating and accessing information; comparing and evaluating information; organising, applying and communicating information; synthesising and creating information.

Eisenberg and Berkowitz (1990) also advanced their big six skills approach to information use. This approach bore the traits of information literacy as articulated by ALA. The skills were “task definition, information-seeking strategies, location and access, use of information, synthesis, and evaluation” (as cited in Owusu-Ansah, 2005, p.368).

Virkus (2003) has also contributed to the review of definitions by focusing her attention on prevailing European approaches. The European attempts at defining information literacy, just as was the case with the many Australian and American endeavours, produced no deviation from the definition provided in 1989 by the American Library Association Presidential Committee on Information Literacy.

2.2. The Significance of Information Literacy Education

The need for information literacy cannot be underscored and many authors have recognised that information literacy is of crucial importance. Baro and Fyneman (2008) note that “information literacy is important particularly in this age because it allows us to cope by giving us the skills to know when we need information and where to locate it effectively and efficiently” (p.660). Adeogun (2006) expresses similar views by stating that “the purpose of information literacy (IL) education is to help students to develop critical thinking and analytical skills which they will need for transforming information into knowledge” (p.48). Dadzie (2009) also confirms the importance of information literacy by mentioning that “information literacy has thus become one of the most vital sets of skills for the twenty first-century”, and therefore, “everyone needs IL skills to enable him/her to function adequately as a citizen of the community” (p.165).

Idiodi (2005) also echoes the importance of information literacy by pointing out that “the information explosion of the 20th century subsequently gave birth to the concept of information literacy and Information literacy has gradually become a strategic issue for tertiary institutions, where the emphasis is placed on teaching and learning strategies that deliver the skills needed by students to succeed in an increasingly competitive environment” (p.225). As stated earlier, “the quality, authenticity, validity and reliability of some of the materials in electronic format via the internet cannot be guaranteed, and these uncertainties are one factor in particular that makes the need for information literacy pressing” (Idiodi, 2005, p.225).

Bruce, Chesterton, and Grimison (2002) are also of the same view and maintain that information literacy, from both national and international perspectives, is a central issue, and strategies to raise awareness and make information literacy a focal point of the academic experience within the university community should be explored and developed. They state further that computer competence and critical thinking skills are the components that give information literacy its unique identity and differentiate it from traditional library orientation and bibliographic instruction.

Dadzie (2009) also states clearly that “some students entering college and university have limited knowledge of fundamental research and information competency skills” (p.169). She goes on to mention as a reason that students “may not have learnt how to effectively locate information, or evaluate, synthesise and integrate ideas; or may not have learned how to use information in original work and give proper credit for information used” (p.169).

For that matter, “Information literacy has gradually become a strategic issue for tertiary institutions, where the emphasis is placed on teaching and learning strategies that deliver the skills needed by students to succeed in an increasingly competitive environment” (Idiodi, 2005, p.224). It is further confirmed that students who follow information literacy programmes “have fewer difficulties in writing papers; are better able to identify reliable sources and assess available resources and services provided by the library; and learn how to understand and draft bibliographical references and avoid plagiarism” (Malliari and Nitsos, as cited in Dadzie, 2009, p.169).

Another important fact is that information literacy skills potentially enable students to succeed academically and ultimately help them also to secure future job opportunities (Dadzie, 2009). Adeogun (2006) also shares similar views that there is the need for graduates to acquire lifelong learning skills which will not only be beneficial in education, but will help them to continue to grow even outside the classroom after their education. She concludes that “such skills are acquired through an educational system that enables students to develop a set of critical thinking skills involving the use of information to create meaning” (p.46) and she adds that “building such skills requires interaction with real world information resources for information gathering and synthesis, and this calls for the development of information literacy skills among tertiary institution students” (p.46). Wurman (2001) summarizes it all by stating that “without information literacy people are condemned to lack of information, dependence upon others for access to knowledge and information, and even to acute levels of

information anxiety” (Wurman, as cited in Bruce, 2004, p.4). Information literacy is no doubt very important in education and therefore a convenient approach must be used to teach it in order to make it more effective.

2.3. Approach to Information Literacy Education

It is worth noting that information literacy education or instruction may be approached differently either as a course-related library instruction, course integrated projects, online tutorials or a stand alone course. However, “the best approach is that which integrates information literacy into the curriculum” (ACRL, as cited in Adeogun, 2006, p.48). According to Dadzie (2009) “a number of authors share in the opinion that the ideal method for enabling students to develop their information literacy skills is by embedding the information literacy activity into the student’s course materials” (p.169). This opinion is shared by authors like Cmor (2009), and Hook and Corbett (2004). Cmor (2009) states clearly that building a curriculum-integrated information literacy programme that provides students the opportunity to learn, practice, and refine their skills and knowledge throughout their programmes is a worthy goal in higher education. Hook and Corbett (2004) also agree and emphasise it by mentioning that because information literacy is not discipline specific, students are able to transfer skills and research techniques from one course to another, and mostly for that reason, implementing information literacy across the university curricula should receive greater attention and focus. They further state that it is important to constantly keep in mind that information literacy is really for the students and it must be incorporated in the curriculum in a way that will encourage students to see the value of using it in their academic studies.

One reason cited in support of this method of teaching information literacy is the that it “allows information literacy to be delivered in the context of the subject students are studying, as well as consolidating the partnership between librarians and teaching faculty in providing IL training” (Dadzie, 2009, p.169). Korobili, Malliaria and Christodoulou (2009) are equally convinced that “a course for credit integrated in the curriculum of each department which would be prepared by faculty in cooperation with librarians would provide the necessary knowledge for students so that they could operate in the emerging information environment” (p.341). Kinengyere (2007) also supports the idea that information literacy education should be embedded in the curriculum: “IL should be included in the respective universities’ curricular so as to give it more emphasis and this will make all researchers an

potential researchers and other library users realise the importance of being information literate” (p.340). Cochrane (2006) agrees with other authors and states that “ideally, IL should be embedded into degree pathways and students offered the opportunity to develop their competence as they progress through their degree” (p.113). These ideas show to some extent the significance of information literacy education and it must therefore be given the needed attention to make it more effective.

2.4. Challenges to Information Literacy Education

Sharing her views on making information literacy a success, Kinengyere (2007) mentioned that “helping people become information literate is a responsibility of all stakeholders, whether they be librarians, lecturers, or administrators. It involves all disciplines that are involved in research and teaching in an institution. Ideally, administrators support IL goals for their institutions. Course instructors help their students achieve IL in their chosen fields, and librarians and other campus professionals collaborate with course instructors in this effort” (p.329).

Kinengyere (2007) identified that information literacy education has not been embedded in the curriculum and sees it as one of the challenges to information literacy education. She states that not embedding information literacy education into the curriculum, will not give it “more seriousness” (p.339). She also mentions that limited knowledge in ICT can influence greatly the development of information literacy programs. Lwehabura and Stilwell (2008) mentioned that there is no dedicated IL policy to guide IL practices, and also there is lack of awareness among students about the IL instruction sessions on offer. They identified these challenges among other challenges such as lack of proactivity by librarians, lack of partnerships between librarians and teaching staff to mainstream IL, availability of resources, all these weaken the effectiveness of imparting IL knowledge and skills.

2.5. Preferences of Information Sources

In order to get relevant information on preferences of information sources by graduate students, there was the need to broaden the search to cover other areas like information needs and behaviour of different user groups such as academics, researchers, graduate students and undergraduates.

Mittermeyer and Quirion (2003), reported in a study of incoming first-year undergraduate students in Quebec that many students used the internet extensively to find course-related information. In another study conducted in the University of Botswana by Fidzani (1998), it was established that graduate students relied heavily on library books, textbooks and journals as sources of information used for course-work. Kerins et al (2004), in another study of undergraduate engineering students “reported that the majority of the students indicated that the internet was the first source of information they used for a project, course assignment” (Kerins et al, as cited in Baro and Fyneman, 2009, p.667).

Another study of first year undergraduate students reported that all of the participants felt that they had little need to look for information outside what faculty provided for them in their courses, and where information was needed they felt they were able to acquire it using general search engines (Seamans, 2001). It was also found that student participants were comfortable using technology to learn and that web-based modules could be used in the future to teach library instruction.

Two other studies conducted differently by George, Bright, Hurlbert, and Linke (2006) and Vezzosi (2008) also showed that both Master and Doctoral students rely heavily on the internet for their research work, but they also consulted the physical library for their information needs.

2.6. Conclusion

This chapter has examined relevant literature which has informed this research. An overview of information literacy was presented, along with a review of the literature pertaining to other aspects of the concept.

CHAPTER 3: METHODOLOGY

This chapter discusses the methodology used in this research and also gives the reasons for selecting specific methods. Research by its nature is a complex process; hence it is very imperative for the researcher to stick to certain procedures in collecting, analyzing, and interpreting data in order to maximize the validity of the findings (Bryman, 2004). Both the sampling technique used in selecting respondents for the research and the sample itself are discussed. The online survey tool used to design the questionnaires, and the interview process used for the data collection are also discussed and justifications are provided for using these data collection instruments.

3.1. Theoretical Framework

The research adopted ideas from Bruce (1997) *The Seven Faces of Information Literacy* as its framework. These ideas are further elaborated below:

Bruce's (1997) relational model frames information literacy into seven different ways of experiencing information-use through active and reflective engagement with the relevant information practices. The users' conceptions of information literacy produce seven categories of description:

- (1) *Information Technology conception*, which associates information literacy with the use of IT to gather and communicate information.
- (2) *Information Sources conception*, where information literacy is perceived as the knowledge of sources and the ability to access these directly or indirectly via an intermediary.
- (3) *Information Processing conception*, which describes information literacy as "executing a process" (Bruce, 1997, p. 128), where a new situation is tackled through the use of an appropriate strategy to find and use information. The nature of the process varies according to the participant of this process.
- (4) *Information Control conception*. Here information literacy is associated with the effective control and manipulation of information through the use of mechanical devices, memory, or IT.
- (5) *Knowledge Construction conception*, where information literacy is perceived as "building a personal knowledge base in a new area of interest" (Bruce, 1997, p.137).

Bruce stresses that this differs from the storage of information, because it involves the application of critical analysis of the information read.

(6) *Knowledge Extension conception*, which envisages the application of knowledge and personal perspectives that lead to new insights.

(7) *Wisdom conception*, which is associated with the wise and ethical use of information considered in a wider historical or cultural context. In addition, the information here undergoes “a process of reflection which is part of the experience of effective information use” (Bruce, 1997, p. 148).

This framework was adopted in order to examine the relations between respondents’ views of information literacy and the conceptions of information literacy as expressed by users in Bruce’s (1997) relational model which frames information literacy into seven different ways of experiencing information-use through active and reflective engagement with the relevant information practices. However, only conceptions which had relations with respondents’ views of information literacy were examined. The relations are discussed in section 4.3.4.

3.2. Methodology

This research uses survey research methodology to examine the views of graduate students on information literacy. There are numerous reasons for using a survey as a method in research. Bell (1999, p.13) states that “the aim of a survey is to obtain information which can be analysed and patterns extracted and comparisons made” (Bell, as cited in Pickard, 2007, p.95). In other words, the purpose of survey research is to gather and analyse information by questioning individuals who are either representative of the research population or are the entire research population. And Pickard (2007) also states that the term ‘survey’ usually refers to a “study that has used a representative sample and questions must be asked using a standardized questioning procedure applied equally and consistently to all research participants” (p.95). A survey research method was considered suitable for this research due to the fact that it can include both “qualitative and quantitative research, but is usually quantitative with a limited qualitative element” (Pickard, 2007, p.95), and this also falls in line with the research design since it is a combination of both quantitative and qualitative techniques.

This research adopted an interpretivist approach. The use of this approach allows for a more detailed picture to emerge and thus, a deeper understanding of the phenomena under study.

3.3. Research Design

This research uses a mixed method, thus both quantitative and qualitative methods for data collection and subsequent analysis. “Mixed methods research is formally defined as the class of research where the researcher mixes or combines quantitative and qualitative techniques, methods, approaches, concepts or language into a single study” (Johnson and Onwuegbuzie, 2004, p.17). It is further stated that “its logic of inquiry includes the use of induction (or discovery of patterns), deduction (testing of theories and hypotheses), and abduction (uncovering and relying on the best of a set of explanations for understanding one’s results)” de Waal (as cited in Johnson and Onwuegbuzie, 2004, p.17). According to Johnson and Onwuegbuzie (2004) mixed methods research attempts to legitimise the use of multiple approaches in answering research questions, rather than restricting or constraining researchers’ choices by rejecting dogmatism.

Johnson and Onwuegbuzie (2004) also propose some strengths and weaknesses of mixed methods research as follows:

Strengths

- Words, pictures, and narrative can be used to add meaning to numbers.
- Numbers can be used to add precision to words, pictures, and narrative.
- Can provide quantitative and qualitative research strengths.
- Researcher can generate and test a grounded theory.
- Can answer a broader and more complete range of research questions because the researcher is not confined to a single method or approach.
- A researcher can use the strengths of an additional method to overcome the weaknesses in another by using both in a research study.
- Can provide stronger evidence for a conclusion through convergence and corroboration of findings.
- Can add insights and understanding that might be missed when only a single method is used.
- Can be used to increase the generalizability of the results.
- Qualitative and quantitative research used together produce more complete knowledge necessary to inform theory and practice (Johnson and Onwuegbuzie 2004, p.21).

Weaknesses

- Can be difficult for a single researcher to carry out both qualitative and quantitative research, especially if two or more approaches are expected to be used concurrently; it may require a research team.
- Researcher has to learn about multiple methods and approaches and understand how to mix them appropriately.
- Methodological purists contend that one should always work within either a qualitative or a quantitative paradigm.
- More expensive.
- More time consuming (Johnson and Onwuegbuzie 2004, p.21).

However, taking into account the above mentioned strengths and weaknesses of mixed methods research, the author of this thesis decided to use this approach to be able to answer the research questions of this thesis.

3.4. Area of Study

The focus of this research is on examining graduate students' views on information literacy in order to better understand their opinions and experiences with information literacy in their use of information for academic work or research. The research therefore focuses on finding out how respondents perceive information literacy, touching on issues such as challenges affecting information literacy education, plagiarism and copyright in the use of information. The research also examines respondents' opinions about the significance of information literacy and also the best approach and time to introduce information literacy programmes in higher education. Finally, the study examines information sources respondents use most and difficulties they might face in retrieving relevant information from these sources for academic work or research. Information literacy is a very broad concept but the research covered only some aspects of interest to the topic of this study.

3.5. Sampling

“Sampling is used when it is not possible or practical to include the entire research population in your study, which is usually the case. Sampling is the process of selecting a few from the many in order to carry out empirical research” (Pickard, 2007, p.59). In other words,

sampling is the act, process, or technique of selecting a suitable sample, or a representative part of a population for the purpose of determining parameters or characteristics of the whole population. There are two basic types of sampling: probability and non-probability sampling. Probability sampling is usually used in quantitative research because it randomly draws representatives from a wider population and thus, allows the researcher to make generalisations from the findings of the study (Cohen, Manion, and Morrison, 2001). Similarly, Pickard (2007) confirms that “probability sampling is vital in order to make valid generalisations about the wider population” (p.97), and she further advises that “when non-probability sampling is used you must take care with any statements you make that attempt to generalise to the wider population” (Pickard, 2007, p.97). It has also been mentioned by Cohen, Manion, and Morrison (2001) that a probability sample has less risk of bias than a non-probability sample. However, a non-probability sampling technique was used to select the sample for this study. Convenience sampling was appropriate for this study because the researcher needed a readily available sample due to the limited period of time, within which the study was carried out, precisely from February to June, 2010.

3.6. Sample

According to Webster (1985), a sample is a finite part of a statistical population whose properties are studied to gain information about the whole. When dealing with people, it can be defined as a set of respondents (people) selected from a larger population (a group of individual persons from which samples are taken for measurement) for the purpose of a survey. The sample of this research is the DILL² [2007- 2008 - 2009] students. The reason for selecting this sample was partly based on the fact that the research was conducted within a limited period of time and therefore the researcher had to resort to a convenient sampling technique, and also on the fact that the sample consisted of students with different educational background and experience in the field of information science, and it is assumed that they have had some form of information literacy education and therefore they have been involved in information literacy education programmes in one way or another during their undergraduate and postgraduate studies or as part of their work in various information fields, so they might have different views about the concept of information literacy and its

² The European Union Erasmus Mundus Master’s programme Digital Library Learning (DILL) is a two-year international master’s programme for information and library workers offered by a consortium of three universities: Oslo University College (Norway), Tallinn University (Estonia), and University of Parma (Italy). The first batch of students was enrolled in 2007, the second batch in 2008, and the third batch in 2009.

importance in academic work or research. Therefore, this research aims to examine these views.

3.7. Data Collection Methods

The main data for the research was collected using QuestBack online survey questionnaires tool and also face-to-face interviews with selected respondents conducted as a follow-up to the questionnaires, and supported where possible with data from secondary sources. Other online survey tools were considered, but QuestBack was found to be the most appropriate and convenient for this research for its ease of use and also due to the fact that the researcher could use the QuestBack online survey tool for a period of time without a fee, having been granted access through Oslo University College.

3.7.1. Online Questionnaires

Survey data are usually obtained by means of a questionnaire, a series of pre-determined questions that can be self-administered, administered by mail, or asked by interviewers. The use of questionnaires in research is based on one basic underlying assumption that “the respondent will be both willing and able to give truthful answers” (Burns, as cited in Pickard, 2007, p.183). The primary data was collected with the use of both questionnaires and interviews designed on issues directly related to the objectives of the study. Pickard (2007) states that there are a number of reasons for using questionnaires in your research: “you can reach a large and geographically dispersed community at relatively low cost, you can harvest data from a larger sample than would be possible using other technique, anonymity can be offered as well as confidentiality, and the data analysis can be determined from the outset, even as far as coding before the questionnaires have been distributed” (Pickard, 2007, p.183).

3.7.2 Interviews

Pickard (2007) mentions that “interviews are usually used when we are seeking qualitative, descriptive, in-depth data that is specific to the individual and when the nature of the data is too complicated to be asked and answered easily” (p.172). According to Stenhouse (1984) “the purpose of an interview is to access what was in, and on, the interviewee’s mind” (as cited in Pickard 2007, p.172). One major advantage of the interview as Lincoln and Guba (1985) put it “is that it permits the respondents to move back and forth in time – to

reconstruct the past, interpret the present, and predict the future” (as cited in Pickard, 2007, p.172).

Pickard (2007) again mentions that “interviews are used frequently in information and library research” (p.171). Therefore, using face-to-face interviews was appropriate to get additional information as follow up to the online survey on this study.

3.7.3. Using Secondary Data

In today’s world correct information is the key to success. Data is of two types: primary data and secondary data. Primary data is information collected by the researcher or person himself, whereas secondary data is collected by others but utilised or used by the researcher. Secondary data is the data that has already been collected and collated by somebody for reason other than the current study. It can be used to get a new perspective on the current study, to supplement or compare the work or to use parts of it. Secondary sources of data will include previous works such as reports, books, journals, magazines, electronic sources and other related materials.

3.8. Research Instruments

Both online questionnaires and interviews were used as research instruments to collect both quantitative and qualitative data for the research.

3.8.1. Designing the QuestBack Online Questionnaire

The online questionnaires were designed using QuestBack, an online survey tool, and they were distributed to respondents via email. Respondents were able to access the questionnaires via a link in the email which automatically pop-ups the questionnaires when respondents clicked on it.

The questionnaire was designed with a total of 25 questions to collect information on graduate students’ views on information literacy, and the questions were grouped under the following categories:

- Views and Experiences of Information literacy

Different questions were asked to find out how respondents understood the term “information literacy”. Some of the response options given to respondents were selected from Bruce’s (1997) *the Seven Faces of Information Literacy* which was used as the conceptual framework for this research. Questions like “how do you understand the term information literacy”, “which of the following information literacy standard and/or models are you familiar with”, “which of the following best describes an information literate person”, “which of the following information literacy elements do you think are important”, were asked to get respondents understanding as well as their views about information literacy, and relate them to how teachers, information professionals and scholars see information literacy as described in Bruce (1997).

Further questions were asked to probe respondents understanding of legal and ethical issues surrounding the use of information. Respondents were therefore asked to state their understanding of the term “plagiarism” and to identify among some given response options what measures they used to ensure effective, ethical and legal use of information in their academic work or research.

Still on their views and experiences with information literacy, questions were also asked to find out if respondents identified some challenges affecting information literacy education, and what could be done to improve information literacy education and training courses.

- The Significance of Information Literacy Education

Questions were also asked to find the significance respondents attached to information literacy education and training courses in their academic work or research. Respondents were also asked their views about the best approach for information literacy education and at what level of education it was appropriate to introduce information literacy to students. This was asked to find answers to some of the objectives and research questions which this research was addressing.

- **Preferences of Information Sources**

Respondents were asked to indicate their most preferred source of information for academic work and research and their reasons for preferring one source over another, and to also mention any additional sources where they got information from.

- **Demographics**

Demographic data provided included gender, age, and educational background, specifically the last degree completed by respondents.

3.8.2. Designing and Conducting the Interviews

Based on the findings received from the results of the survey, there was the need to conduct qualitative interviews as a follow-up to get in-depth information from respondents on some particular aspects of the topic being researched. As mentioned earlier, Stenhouse (1984) stated that “the purpose of an interview is to access what is in, and on, the interviewee’s mind” (as cited in Pickard, 2007, p.172). Pickard (2007) also adds that “we interview when that is the most appropriate way to access the data we need” (p.172). An interview guide was used and the purpose was to “ensure that each interview covers basically the same ground but gives the interviewer considerable discretion in the conduct of the interview” (Ellis, as cited in Pickard 2007, p.173). In other words, “the researcher prepares a basic checklist to make sure that all the relevant areas of the topic are covered” (Pickard, 2007, p.176).

The nature of the interviews was unstructured but guided, and according to Pickard (2007) “unstructured interviews are used to gain holistic understanding of the thoughts and feelings of the interviewee” (p.175). In other words, the researcher tries to “learn about their point of view” (Pickard, 2007, p.175). Normally, unstructured interviews are concerned with open-ended questions and they allow the respondents to tell their own story in their own words.

The interviews were conducted face-to-face with five selected respondents who also took part in the online survey to expand further on the information they provided in the online survey. The first five respondents who completed and returned the online survey questionnaire were selected for the face-to-face interview. It was assumed that their prompt response to the online survey showed to an extent some interest in the topic under study. They were asked about their understanding of information literacy and their opinions about its relevance in

education. This was to confirm some of the information they provided on understanding of the term “information literacy” as it was asked in the online survey. They were also asked their opinions about when to introduce information literacy in education and which approach to use and also whose responsibility it should be to teach it, faculty or librarians. Again, questions were asked on challenges hindering information literacy education and suggestions how these could be addressed. This was to find out if respondents identified any challenges during their information literacy education. The remaining questions bothered on the benefits of being “information literate” as a graduate student, which source of information respondents used most for their academic work or research and the reasons why they preferred that source, and again if they had additional sources they relied on apart from the internet and the library. Further questions were asked on difficulties respondents faced in retrieving information and whether this was related to the lack or the level of competency in information literacy. Respondents were also asked their understanding of the term “plagiarism” and what they did to avoid plagiarism and copyright issues in their use of information. Finally, respondents were asked to give any comments or suggestions regarding information literacy education.

The interview process lasted for a week and the interviews were recorded with a recorder and each respondent was given a unique code to make identification easy during the transcription and analysis. Transcription of interviews was done as soon as possible after each interview and the analysis followed immediately as well.

3.9. Data Analysis and Presentation

This is a mixed method research and emphasis was put on both qualitative and quantitative methods of data collection and subsequent analysis. However, a combination of deductive and inductive approaches was used to analyse the research findings. Patton (1990) argues that inductive analysis means that the patterns, themes, and categories of analysis come from the data; they emerge out of the data rather than being imposed on prior to data collection and analysis.

3.10. Pilot Study

A pilot study was done to pre-test the online questionnaires in order to make the necessary changes and corrections before sending the final version to the respondents. Nine (9) graduate

students were selected for the pilot study. Six (6) of them were undertaking different Master's programmes elsewhere, and the remaining three (3) were DILL master students. Only six (6) out of the nine (9) questionnaires were completed fully and returned. Various comments and suggestions were received from some of the respondents for the pilot study and this resulted in changes and modifications being made in some of the questions to clarify any ambiguity. Modifications were made to questions regarding understanding of information literacy, challenges to information literacy education, and respondents' preference of information source. Changes were also made in response options to questions on reasons for selecting a particular source of information, and ways of avoiding plagiarism. See Appendix 3 for Pilot study response log.

3.11. Research Limitations

There were some limitations identified in this research. First and foremost, the major limitation was time factor since the research was done within a limited period of time from February to June, 2010, and this in one way or another affected the sample in terms of number, and subsequently affected the amount of data that was collected and analysed. Secondly, due to the small size of the sample, findings from the study cannot be generalised to a larger population.

3.12. Ethical Considerations

Since human subjects were used in both methods of data collection, namely online questionnaires and face-to-face interviews, there was the need to consider ethical issues. Respondents were assured of maximum confidentiality possible and the data collected from the online survey was securely stored in a personal folder on QuestBack, and it was accessible only to the researcher. Respondents were also given every possible detail about the aims of the research and they were equally informed about the fact that participation was voluntary.

3.13. Conclusion

This chapter has explained in detail the methodology used in this research, including the research design, sampling techniques used to select the sample, data collection methods and research instruments. Data analysis and presentation was briefly explained, and finally the pilot study, research limitations and ethical considerations were also discussed.

CHAPTER 4: DATA ANALYSIS AND DISCUSSION OF THE FINDINGS

This chapter presents and discusses the results of the online survey and the interviews. A total of 57 online survey questionnaires were sent out to respondents comprising DILL 1, 2, and 3 students, using QuestBack online survey tool, but only 49 were successfully delivered to respondents' email addresses and out of the 49 questionnaires which were successfully sent to respondents, only 27 (55.1%) of the respondents completed and returned the survey questionnaires, indicating a low response rate (See Appendix 4 for details on survey response log). The questionnaire was made up of both open-ended and close-ended questions. In addition to the online survey questionnaire, face-to-face interviews were also conducted with five respondents as a follow up.

4.1. Analysis of the Online Survey

The following were the findings from the online survey conducted, giving the percentages and number of responses for the various answers pertaining to each question. Findings were presented under various sections which include related questions.

4.1.1. Views and Experience of Information Literacy

Questions under this section indicate respondents' views and experiences of information literacy. The first questions tried to find out how respondents understand the term information literacy.

On the question of understanding the term "information literacy" which had various options for answers, information literacy was mostly understood as finding information located in information resources by 20 (74.1%) of the respondents and also as ways of interacting with the world of information by 20 (74.1%) of the respondents. Other responses were as follows; a set of skills by 18 (66.7%), using IT for retrieval and communication by 17 (63.0%), and a learning concept by 15 (55.6%). Respondents were also given an option to state any other understanding of the term which was not among the pre-defined responses. Out of this, information literacy is said to be an activity for the development of skills and know-how, not the skills themselves or activities. The Figure 1 and Table 1 below illustrate the responses to the first survey question.

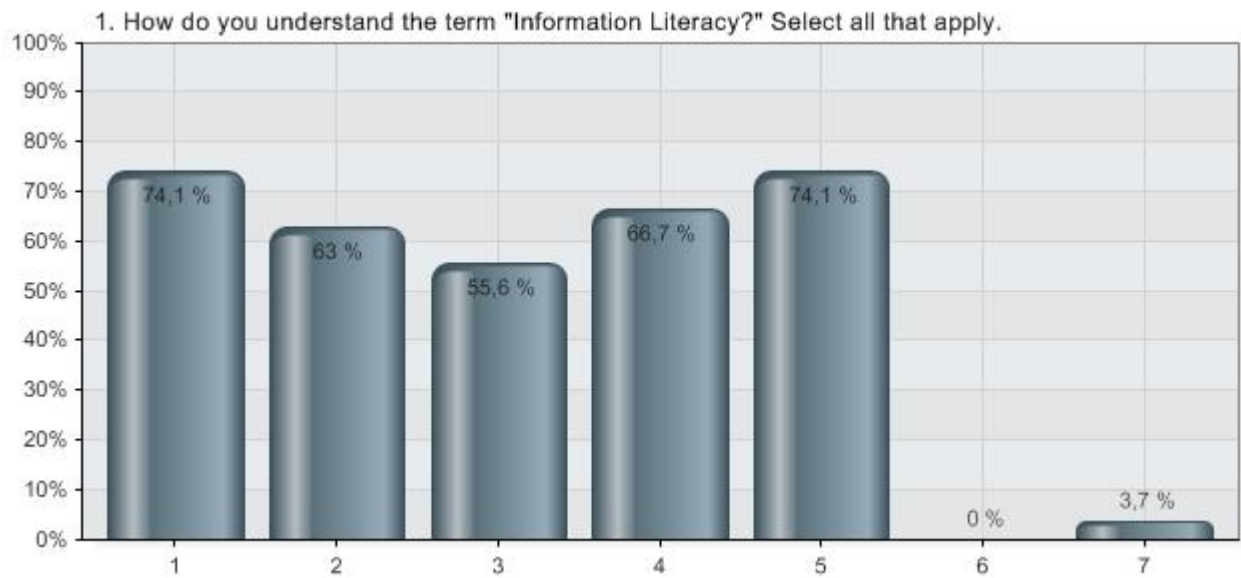


Figure 1: Respondents' understanding of information literacy giving in percentages, with the horizontal numbers (1-7) representing response options, and the vertical numbers in percentages representing the response rate (See Table 1).

Table 1: Summary of responses on understanding information literacy.

Alternatives	Percent	No. Of Responses
1. Finding information located in information resources	74.1%	20
2 Using IT for retrieval and communication	63.0%	17
3 A learning concept	55.6%	15
4 A set of skills	66.7%	18
5 Ways of interacting with the world of information	74.1%	20

6 Don't understand	0.0%	0
7 Other, please specify	3.7%	1
Total number of respondents		27

On the question of familiarity with standards or models of information literacy, it was realised that respondents were mostly familiar with the ALA standards of information literacy 15 (55.6%). However, 8 (29.6%) of the respondents indicated that they were not familiar with any of the information literacy standards or models given as response options. Bruce (1997) seven faces of information literacy had 4 (14.8%) of responses, with 3 (11.1%) being familiar with CAUL standards of information literacy. Only 3 (11.1%) were familiar with all the standards and models of information literacy given as response options. The Big Six which is also a popular information literacy model in the United States had only 2 (7.4%) responses. Surprisingly, ANZIL standards of information literacy which is partly based on the ALA standards had the lowest in terms of familiarity 1 (3.7%) of the total responses. The Figure 2 and Table 2 below illustrate the responses to the second survey question.

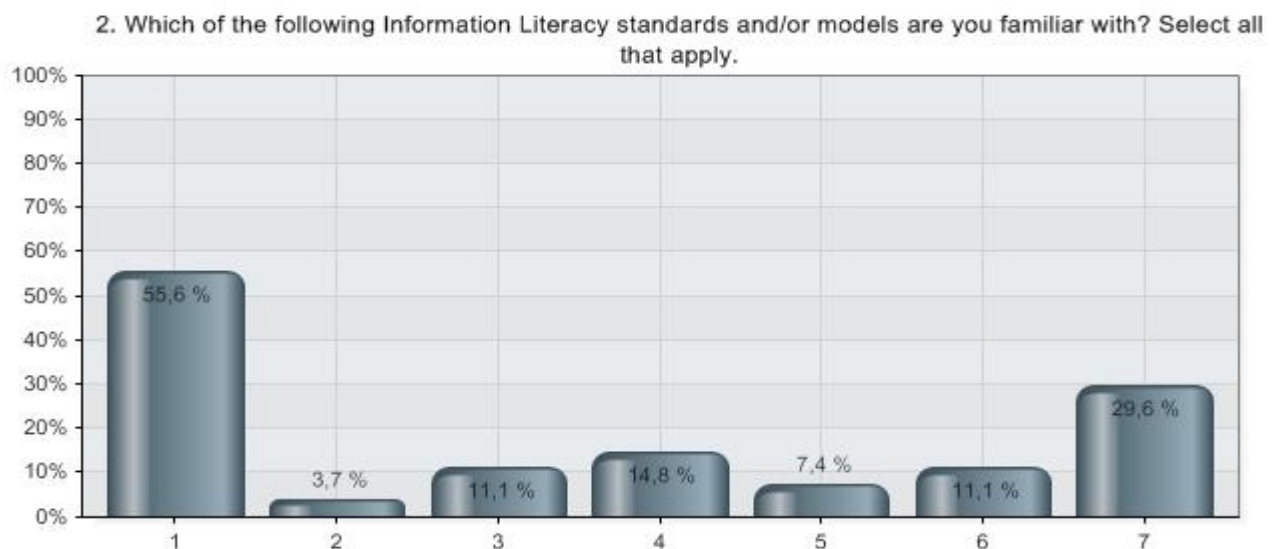


Figure 2: Respondents' familiarity with information literacy standards and/or models, with numbers (1-7) representing response options with the corresponding response rate giving in percentages (See Table 2).

Table 2: Information literacy standards and models.

Alternatives	Percent	No. Of Responses
1 ALA standards	55.6%	15
2 ANZIIL standards	3.7%	1
3 CAUL standards	11.1%	3
4 Seven Faces	14.8%	4
5 Big Six	7.4%	2
6 All	11.1%	3
7 Other, please specify	29.6%	8
Total number of respondents		27

On the question of identifying how best to describe an information literate person, the options were selected among various attributes found in information literacy standards and models proposed by different authors and organisations, in addition to those stated in the conceptual framework used. Out of that, most of the respondents described an information literate person as someone who critically analyses information – trying to reveal values 18 (66.7%). Again, they indicated that to be information literate means finding information to form a personal standpoint 13 (48.1%), working with knowledge to gain new insights 12 (44.4%), acquiring mental models of information systems 9 (33.3%). However, 8 (29.6%) of the respondents indicated that an information literate person has all the descriptions mentioned in Fig 3, and 6 (22.2%) of the respondents described an information literate person as someone who initiates a process. Two additional attributes of an information literate person were given by the

respondents as doing any activity which involves search and use of information, and also knowing what information technologies exist and what they are useful for. The Figure 3 and Table 3 below illustrate the responses to the third question of the survey.

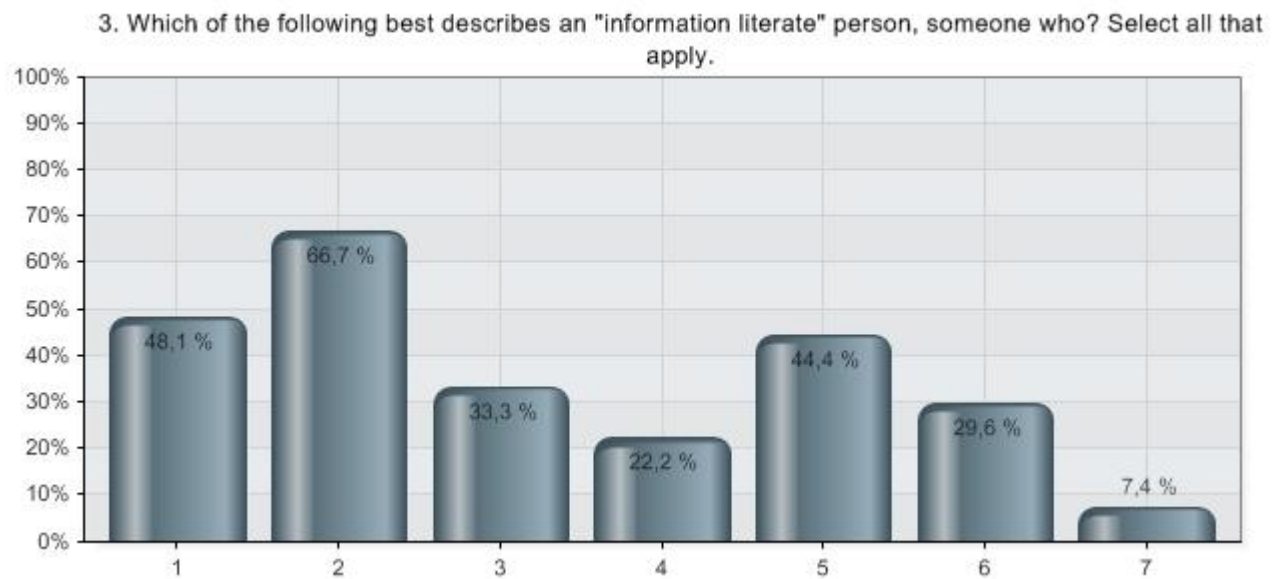


Figure 3: Responses on descriptions of an information literate person (See Table 3).

Table 3: Descriptions of an information literate person.

Alternatives	Percent	No. Of Responses
1 Finds information to form a personal standpoint	48.1%	13
2 Critically analyses information - trying to reveal values	66.7%	18
3 Has acquired mental models of information systems	33.3%	9
4 Initiates a process	22.2%	6
5 Works with knowledge to gain new insights	44.4%	12

6 All	29.6%	8
7 Other, please specify	7.4%	2
Total number of respondents		27

Respondents were given some options on some information literacy elements which are considered important, and out of that the following were indicated as most important elements of information literacy; locating and evaluating the quality of information 15 (55.6%), applying information to create and communicate knowledge 14 (51.9%), making effective and ethical use of information 12 (44.4%). There were 11 (40.7%) of the respondents who indicated that all the elements given were important with regards to information literacy. Also, 10 (37%) of the respondents indicated that recognising information needs was an important information literacy element. Storing and retrieving information had 5 (18.5%) of the responses. The Figure 4 and Table 4 below illustrate the responses to the fourth question of the survey.

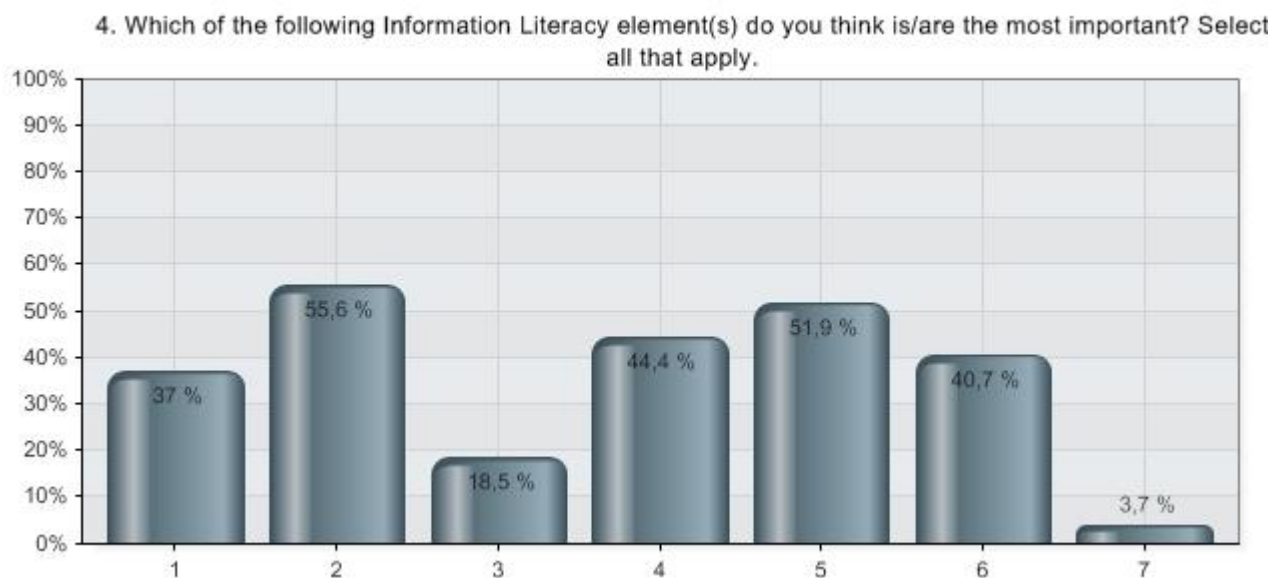


Figure 4: Some information literacy elements, numbers (1-7) show the response options provided with the percentage of response rate (See Table 4).

Table 4: Elements of information literacy.

Alternatives	Percent	No. Of Responses
1 Recognising information needs	37.0%	10
2 Locating and evaluating the quality of information	55.6%	15
3 Storing and retrieving information	18.5%	5
4 Making effective and ethical use of information	44.4%	12
5 Applying information to create and communicate knowledge	51.9%	14
6 All	40.7%	11
7 Other, please specify	3.7%	1
Total number of respondents		27

4.1.2. The Significance of Information Literacy education

The questions under this section indicate respondents' views on the significance of information literacy education.

Almost all the respondents agreed that being information literate can contribute meaningfully to academic work or research 26 (96.6%) of the responses indicating "Yes". Only 1 (3.7%) respondent said "No" giving the reason that "academic research can be a way of practising information literacy but cannot be enough" and that "the person's behaviour towards information plays the important role which can be not gained just academically" (*Respondent*

A1).

Additionally, 13 (48.1%) gave other reasons to support the fact that being “information literate” can contribute meaningfully to academic or research. Some of the reasons they gave were that information literacy helps to interact with information to fulfil academic work and research and also to make efficient and effective use of information to avoid information overload. They further stated that information literacy helps in identifying gaps in research and to find the relevant resources that will help contribute new knowledge to fill existing gaps. Some respondents also mentioned that an “information illiterate” person has flawed skills and it is obvious that the better the skills, the more successful information based activities will be performed. They also stated that being “information literate” helps you locate and analyse relevant information faster on a given topic and this simplifies the research process greatly. One respondent was of the view that

“without information literacy skills, we as researchers would not be able to evaluate the information we receive for relevancy or accuracy. Having good Information literacy skills also allows us to be efficient in our searching, thus (hopefully) saving time because we get the information we need much quicker” (*Respondent A2*).

And another respondent summarized it all saying that “Being information literate in the first place, helps you know your information needs, and base on that you know where and how to find the required information for your academic work or research” (*Respondent A3*).

The Figure 5 and Table 5 below illustrate the responses to the fifth question of the survey.

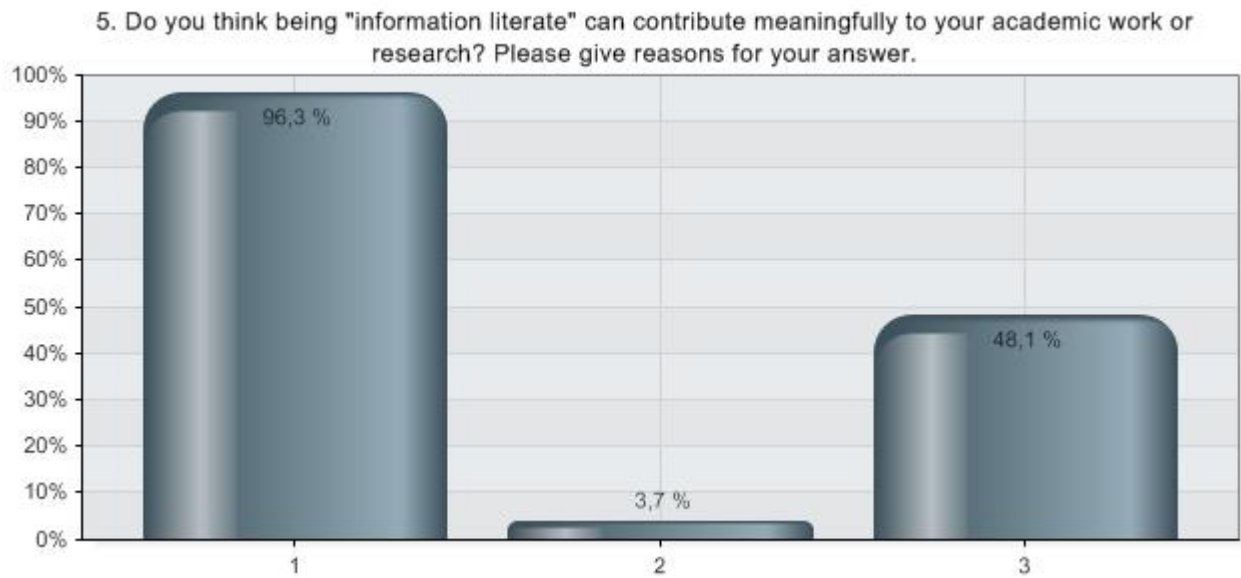


Figure 5: Respondents' answers to information literacy's meaningful contribution to academic work or research, (See Table 5).

Table 5: Summary of responses on information literacy's contribution to academic work or research.

Alternatives	Percent	No. Of Responses
1 Yes	96.3%	26
2 No	3.7%	1
3 Other, please specify	48.1%	13
Total of respondents		27

Like the previous question, data collected on deficiency in information literacy skills and the effect on academic work or research revealed that all the respondents were of the view that deficiency in information literacy skills can affect one's academic work or research 26

(100%) responded “Yes”, and 12 (46.2%) of the respondents gave reasons to support their response. Some of the reasons they gave were that in this information era, it will be difficult to do any academic work or conduct research if one lacks information literacy skills, because information literacy skills are essential to be able to interact with information. Therefore, one will not be able to find and use existing knowledge to carry out research or contribute new knowledge. One respondent mentioned that “information literacy skills are critical for academic success” (*Respondent B1*).

Another respondent confirmed that deficiency in information literacy skills “can affect the research process massively since part of the research is finding information about previous researches, people or sources which can be effective in the process” (*Respondent B2*).

Other respondents also agreed by saying that deficiency in information literacy skills can create difficulty in locating information since one will not be able to locate the information needed. All these reasons confirm the fact that information literacy is very important, and another respondent added that

“without information literacy skills, we would waste a lot of time because we do not know how to search efficiently (to utilise our time effectively), and we would not be able to make the best judgements about quality or accuracy of the information that we do find” (*Respondent B3*).

They also mentioned that deficiency in information literacy skills “will make it difficult for one to know his or her information needs, and also where and how to find information for academic purposes” (*Respondent B4*), and therefore “one will not be able to conduct a good search for relevant information for academic work or research” (*Respondent B4*).

The Table 6 below illustrates the responses to question 6 of the survey.

Table 6: Responses on information literacy skills

Alternatives	Percent	No. Of Responses
1 Yes	100%	26

2 No	0.0%	0
3 Other, please specify	46.2%	12
Total number of respondents		26

There were different views on the question of including information literacy and training courses in graduate programs. While some of the respondents agreed that information literacy education and training courses should be included in graduate programmes 21 (77.8%), others were not in agreement 6 (22.2%). Various reasons were given their answers as to whether information literacy education and training courses should be included in graduate programs or not. This represented 14 (51.9%) of the responses. One respondent stated that:

“Information literacy should be continuous as it is a prerequisite for lifelong learning, so at every level of education, information literacy should be taught. Graduate students, and even PhD students still need to learn more about information literacy, since technology keeps changing, students at all levels must be abreast with current knowledge and skills required to create and use information for knowledge sharing” (*Respondent C1*).

Another respondent agreed with this that “Not all graduate students know how to find the right information or have mastery in information process” (*Respondent C2*).

Other reasons were that information literacy education gives confidence to students, and provides them with the opportunity to improve upon their existing skills. Again, it helps students maintain the quality of their work since they are able to determine appropriately what they need to fill the gaps in their academic work.

However, other respondents had different views and they suggested that information literacy education and training courses should best be included in the educational system at an earlier stage like elementary, secondary and undergraduate, than at the graduate level. One respondent believes that “it is far too late in a person's education to be taught about information literacy education programmes at graduate level. These programmes need to be

included throughout all schooling - I believe it is even too late to teach Information literacy at undergraduate level” (*Respondent C3*).

Another respondent had the same view and mentioned that “perhaps better to include information literacy education in undergraduate or even earlier education. The person qualified for a graduate program should have acquired these kinds of knowledge and skills” (*Respondent C4*).

Similar views were expressed by other respondents, except one respondent who stated that “being information literate has nothing to do with formal education” (*Respondent C5*).

The Figure 6 and Table 7 below illustrate the responses to question 7 of the survey.

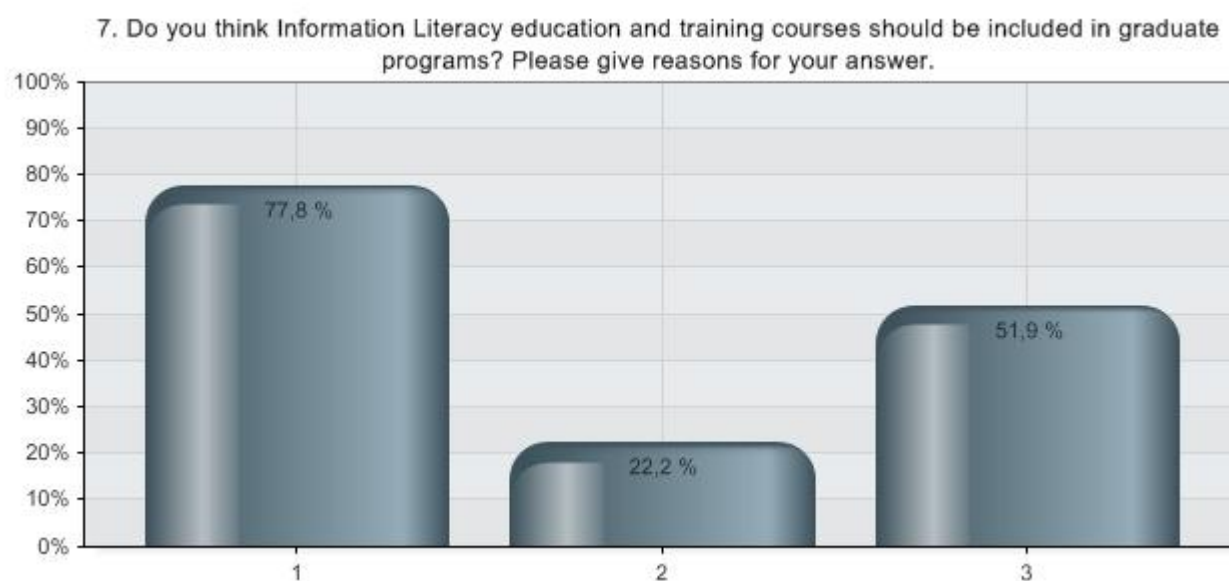


Figure 6: Responses on integrating information literacy and training courses in graduate programs, numbers (1-3) show responses with corresponding percentages (See Table 7).

Table 7: Summary of responses on integrating IL education training courses in graduate programs.

Alternatives	Percent	No. Of Responses

1 Yes	77.8%	21
2 No	22.2%	6
3 Other, please specify	51.9%	14
Total number of respondents		27

Majority of the respondents admitted that information literacy has been helpful in one way or another in their academic work or research. Those who confirmed that information literacy has been very helpful were 13 (48.1%), and extremely helpful 12 (44.4%). However, one respondent indicated that information literacy has been somewhat helpful 1 (3.7%), and another respondent indicated not very helpful 1 (3.7%) in their academic work or research. With the above findings, it can be concluded that information literacy has been very helpful to most of the respondents in their academic work or research, since the number of respondents who did not find information literacy to be helpful in their academic work or research was quite negligible. The Figure 7 and Table 8 below illustrate the responses to question 8 of the survey.

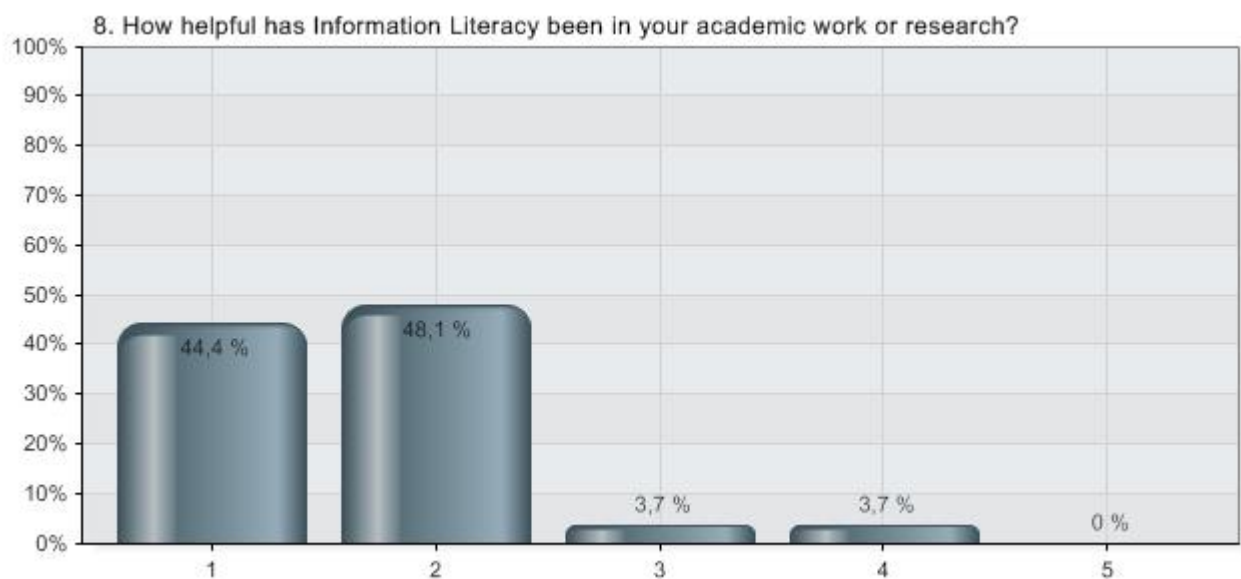


Figure 7: Information literacy helps in academic work or research, numbers (1-5) show responses with their respective percentages.

Table 8: Views on information literacy's helpfulness.

Alternatives	Percent	No. Of Responses
1 Extremely helpful	44.4%	12
2 Very helpful	48.%	13
3 Somewhat helpful	3.7%	1
4 Not very helpful	3.7%	1
Not all helpful	0.0%	0
Total number of respondents		27

As a follow-up question to the previous one, respondents indicated ways in which information literacy helped them in their academic work or research. They stated in the first place evaluating critically both the information and the seeking process 15 (55.6%), then recognising information needs and finding the needed information effectively and efficiently both had 14 (51.9%) of the responses, followed applying prior or new information to construct new concepts and understandings 11 (40.7%). Meanwhile, 10 (37%) indicated that information literacy has been helpful to them in all the ways mentioned (See Table 9). Another group of respondents 9 (33.3%) indicated that information literacy helped them to understand and acknowledge the cultural, ethical, economic, legal, and social issues surrounding the use of information. And the remaining 8 (29.6%) indicated that information literacy was helpful in managing the information they collected for academic or research. The Figure 8 and Table 9 below illustrate the responses to question 9 of the survey.



Figure 8: How information literacy can help in academic work or research, numbers (1-7) stating the various ways IL helped in academic work or research.

Table 9: Ways through which IL can help in academic work or research.

Alternatives	Percent	No. Of Responses
1 Recognising my information needs	51.9%	14
2 Finding the needed information effectively and efficiently	51.9%	14
3 Evaluating critically both the information and the seeking process	55.6%	15
4 Managing the information collected	29.6%	8
5 Applying prior or new information to construct new concepts and understandings	40.7%	11

6 Understanding and acknowledging cultural ethical, economic, legal, and social issues surrounding the use of information	33.3%	9
7 All	37.0%	10
8 Other, please specify	0.0%	0
Total number of respondents		27

On the question of rating their information literacy skills, respondents rated their information literacy skills as very good 12 (46.2%), good 7(26.9%), and excellent 3(11.5%). However, 3 (11.5%) rated their information literacy skills as average, while only 1(3.8%) respondent rated the information literacy skills as poor. The Figure 9 and Table 10 below illustrate the responses to question 10 of the survey.

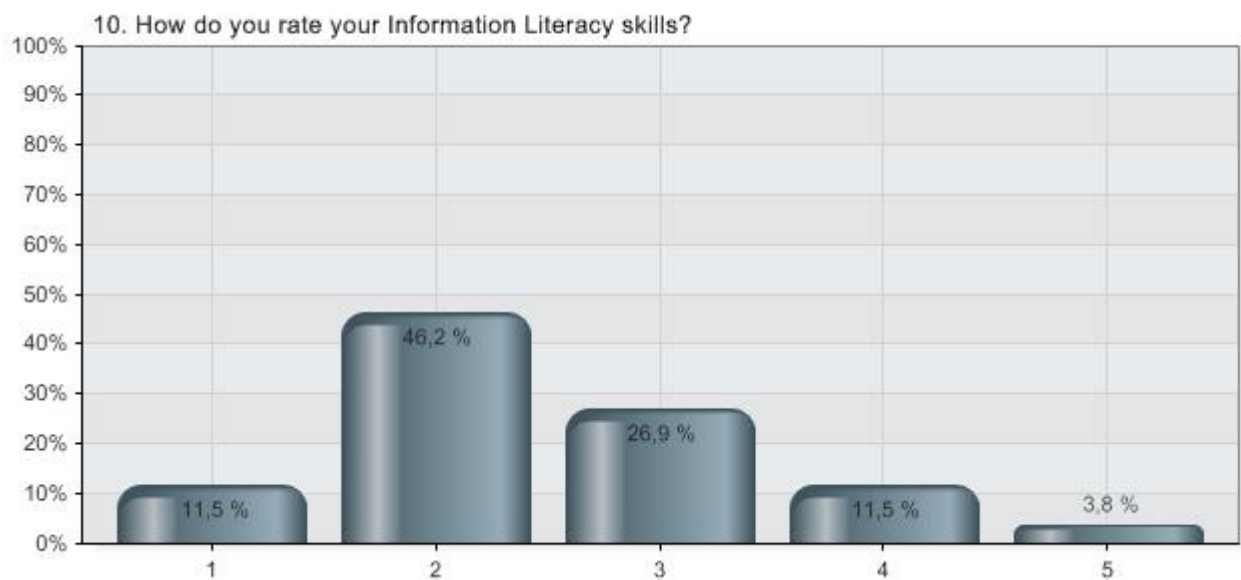


Figure 9: Rating respondents' information literacy skills, numbers (1-5) being the scale with corresponding percentages (See Table 10).

Table 10: Respondents' IL skills.

Alternatives	Percent	No. Of Responses
1 Excellent	11.5%	3
2 Very Good	46.2%	12
3 Good	26.9%	7
4 Average	11.5%	3
5 Poor	3.8%	1
Total number of respondents		26

With regards to which level of their education respondents were introduced to information literacy education and training courses, findings showed that majority of the respondents were introduced to information literacy at the undergraduate level with 19 (70.4%) responses, while 8 (29.6%) were introduced to information literacy at the master's level. It was also realised that some respondents were introduced to information literacy education and training courses in an informal way either during or after their studies 5 (18.5%). One respondent indicated that information literacy was also his research interest and his previous master thesis was about information literacy of engineering students. Another respondent was introduced to information literacy after the bachelor's degree while working in an academic library where he did a lot of researches. The rest of the respondents indicated that they were introduced to information literacy informally as part of the job training, covering just the concept without any formal training or courses. The Figure 10 and Table 11 below illustrate the responses to question 11 of the survey.

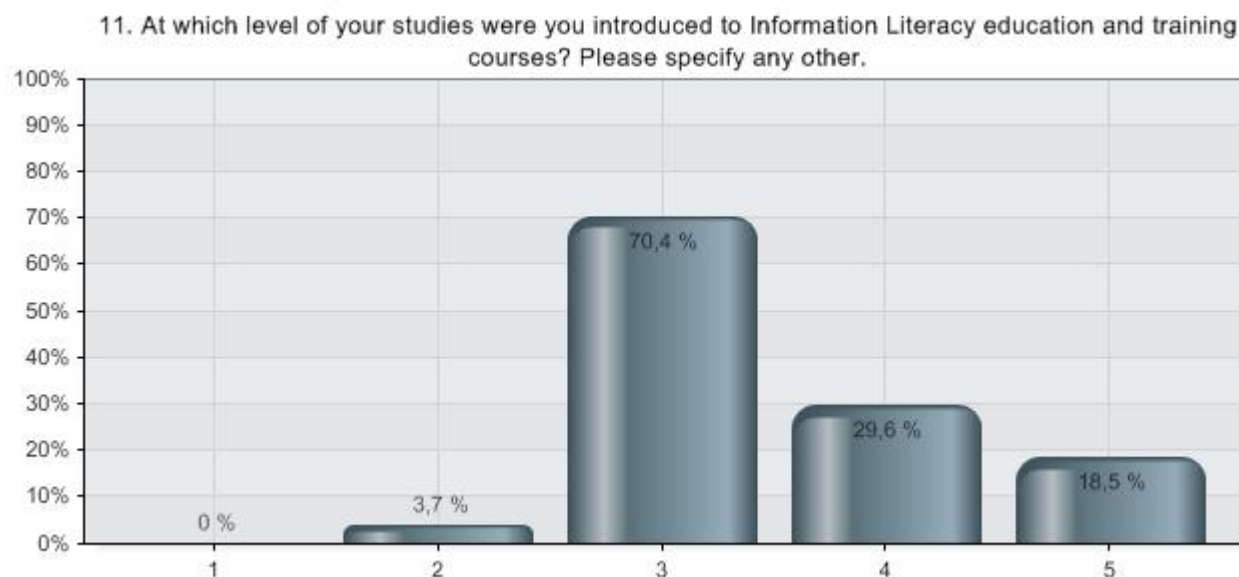


Figure 10: Level where IL education was introduced to respondents, numbers (1-5) indicating the educational level at which respondents were introduced to IL education with corresponding percentages, (See Table 11).

Table 11: Educational level where respondents were introduced to IL education.

Alternatives	Percent	No. Of Respondents
1 Elementary school level	0.0%	1
2 Secondary school level	3.7%	1
3 Undergraduate level	70.4%	19
4 Master's level	29.6%	8
5 Other, please specify	18.5%	5
Total number of respondents		27

Respondents were also asked to indicate how they were introduced to information literacy education and training courses, and the findings showed most of the respondents were introduced to information literacy education and training courses either through basic library education/orientation 15 (55.6%) or as part of their educational curriculum 15 (55.6%). Online information literacy education training programme had 4(14.8%) of the responses, and 3 (11.1%) gave similar responses to the previous question, one being the workplace (academic library) and the other on the job training. However, one respondent indicated learning about information literacy through ACRL website. The Figure 11 and Table 12 below illustrate the responses to question 12 of the survey

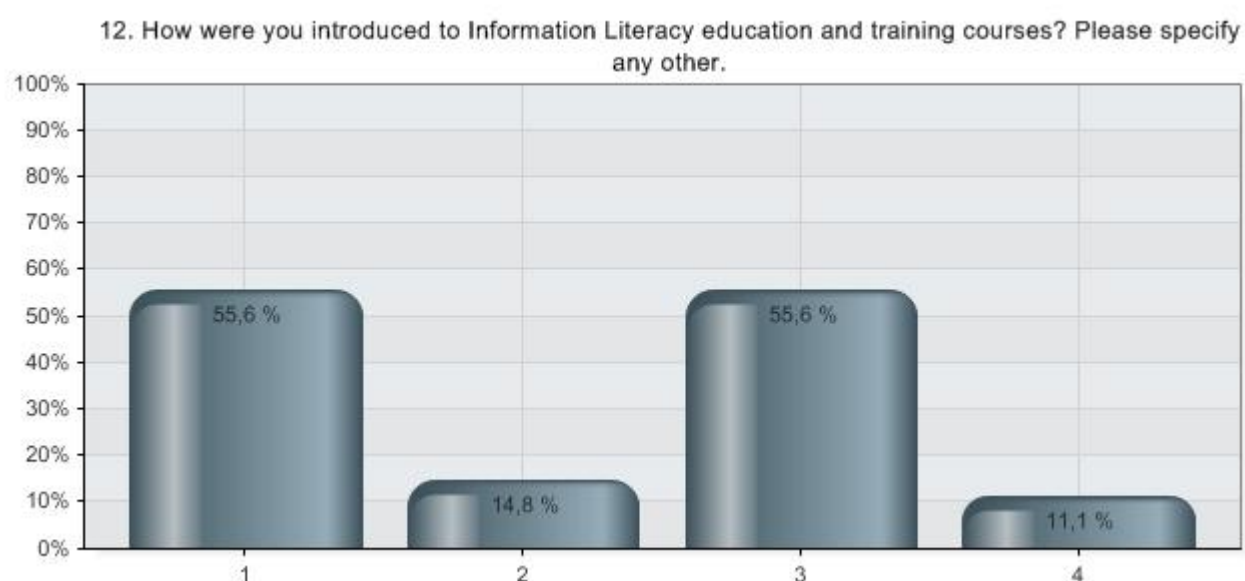


Figure 11: Information literacy education approaches with numbers (1-4) representing the various information literacy education options and the corresponding response rate in percentages (See Table 12).

Table 12: Various information literacy education approaches.

Alternatives	Percent	No. Of Responses
1 Through basic library education/orientation	56.6%	15

2 Online information literacy education and training programme	14.8%	4
3 As part of the curriculum	55.6%	15
4 Other, please specify	11.1%	3
Total number of respondents		27

4.1.3. Challenges to Information Literacy Education

Questions in this section indicate respondents' views on challenges to information literacy education.

Most respondents agreed that there were challenges to information literacy education and training courses. The findings showed that 25(92.6%) of the respondents said "Yes", while only 1 (3.7%) respondent said "No", and another respondent 1 (3.7%) did not know or was not sure of any existing challenges to information literacy education and training courses. Figure 12 and Table 13 below illustrate the responses to question 13 of the survey.

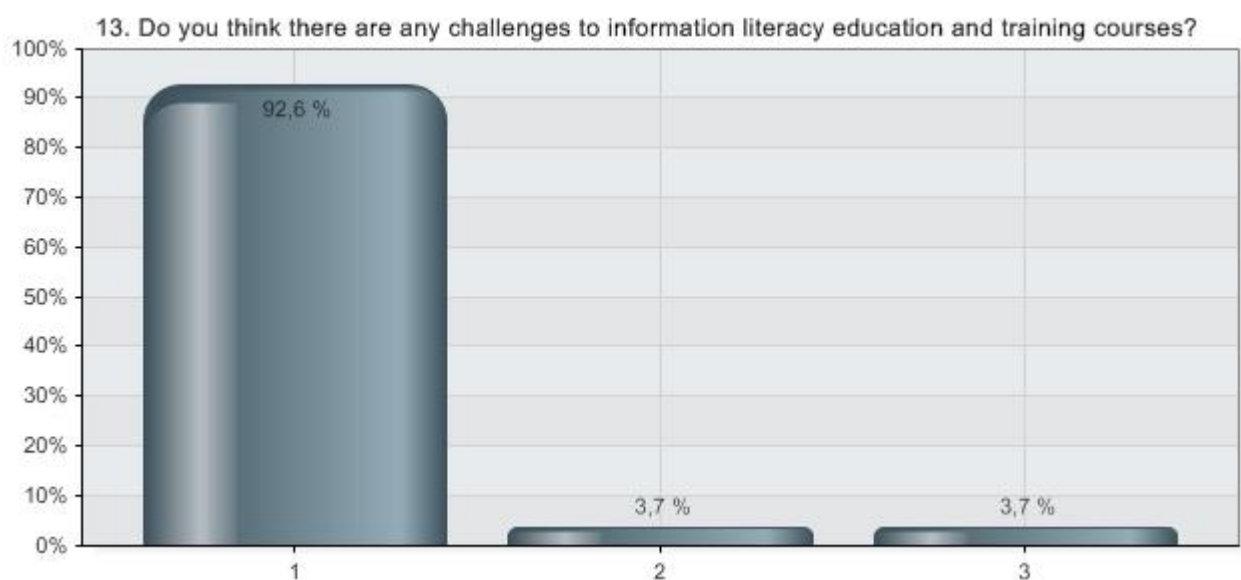


Figure 12: Respondents' opinions on challenges to information literacy education, with percentages of responses, see Table 13.

Table 13: Opinions on information literacy education challenges.

Alternatives	Percent	No. Of Responses
1 Yes	92.6%	25
2 No	3.7%	1
Don't know/Not sure	3.7%	1
Total number of respondents		27

Among the challenges stated in the response options, respondents indicated mostly lack of interest in, and/or understanding of the concept and its importance and relevance in today's economies and societies as the major challenge to information literacy education and training courses with 25 (92.6%) responses. Other challenges selected by respondents were poor information and library infrastructure 17 (63%), lack of funding/financial support 17 (63%), lack of interest among students 15 (55.6%), lack of interest among faculty 14 (51.9%), lack of interest among librarians and information professionals 11 (40.7%). There were additional challenges mentioned by some respondents which made up 5 (18.5%) of the responses. The additional challenges mentioned by respondents were similar to the ones given in the response options. These were lack of awareness of the concept, importance and necessity of information literacy in today's life and today's world, lack of organizational support, methodology of delivery, technological barriers, and lack of interest from faculty. Figure 13 and Table 14 below illustrate the responses to question 14 of the survey.

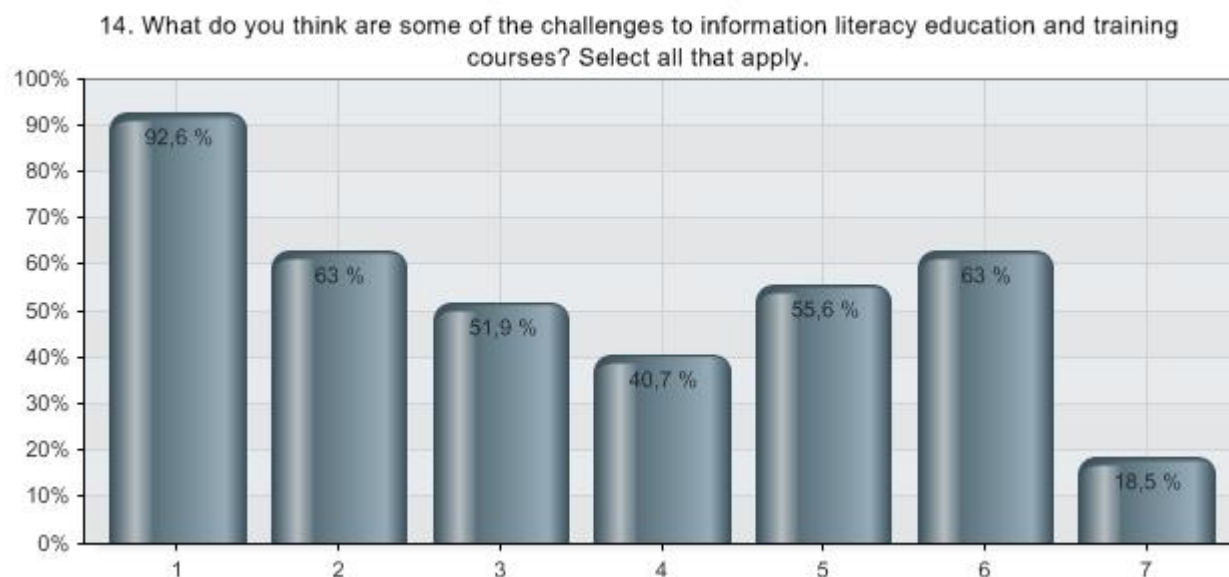


Figure 13: Some challenges to information literacy education, numbers (1-7) stating the various challenges perceived with their response rate in percentage, see Table 14.

Table 14: Perceived IL education challenges.

Alternatives	Percent	No. Of Responses
1 Lack of interest in, and/or understanding of the concept and its importance and relevance in today's economies and societies	92.6%	25
2 Poor information and library infrastructure	63.0%	17
3 Lack of interest among faculty	51.9%	14
4 Lack of interest among librarians and information professionals	40.7%	11
5 Lack of interest among students	55.6%	15
6 Lack of funding/financial support	63.0%	17

7 Other, please specify	18.5%	5
Total number of respondents		27

Following respondents answers on the challenges to information literacy education, a further question was asked to find out again from respondents what could be done in terms of initiatives and actions to improve information literacy.

Some of the respondents were of the opinion that the government should realize the importance of information literacy and provide enough funds to improve the information infrastructure in the community as well as related learning and education and they also meant to state that the government needs to allocate some part of the budget for information literacy education.

Other respondents also advocated for information literacy education to be part of the curriculum. One respondent stated that information literacy education should be “part of the curriculum as a required and complementary course in research methods with some minimum credits (i.e. ECTS Credits) or integrate it within the research method courses” (*Respondent D1*).

Another respondent shared the same opinion and stated that “University administration should have a policy to include information literacy courses compulsory at undergraduate and graduate levels” (*Respondent D2*).

There were also other opinions on the fact education ministries and universities need to work together to put in place policies to facilitate information literacy education at all levels of education and this should be done by getting all the stakeholders involved, as one respondent put it that “education ministries need to put in place policies to put information literacy education courses first for teachers and then for students in elementary and secondary schools and these courses should be taken in information centres and libraries” (*Respondent D3*). A third respondent also stated that “Integrating information literacy education in the curriculum at every level of education will be of great help” (*Respondent D4*).

However, some respondents were also of the opinion that information literacy should be part of the curriculum but it should be introduced earlier than at undergraduate or graduate levels,

thus

“begin early! These are lifelong skills and are becoming (if they aren't already) required skills - internet banking, shopping, recognising scam emails! As said previously, it is far too late to try to tell students at graduate or undergraduate level the pitfalls of relying on Google and/or Wikipedia!” (*Respondent D5*).

Another respondent also stated that “introduce students at early ages about basics of this concept, but make them think that this is important and difficult field. Otherwise, they will think it is just one of the librarians boring instructions” (*Respondent D6*).

Other opinions were about making information literacy courses interesting and the fact that learners should be well-motivated and be surrounded by qualified trainers with a strong learning culture, and organizations should be supportive for such projects. The need to first create awareness programmes and policy decisions of the educational planning bodies at various levels was also mentioned. Again, they stated that one important thing was the need to recognise the importance of information literacy and create the awareness through the development of national information literacy standards and programmes at country level to make its relevance to people's life more obvious, and this will “help people to develop interest in information literacy and strive to be information literate” (*Respondent D7*).

One respondent made mention of collaboration between librarians and faculty to facilitate the teaching of information literacy and stated that

the responsibility for teaching information literacy should be made clear from the onset, that is whether information literacy should be handled by librarians or by faculty, or still there should be a collaboration between librarians and faculty to facilitate the teaching of information literacy (*Respondent D8*).

Another also mentioned that “improving and promoting open source resources of information can be a way to increase the availability of useful data to individuals and motivate them to deal with the information which they think can be useful and helpful for them” (*Respondent D9*).

Other opinions revealed that information literacy education should not be targeted at only academic, companies should also get involved to make their employees information literate,

as stated by one respondent “the companies should have frequent courses on information literacy education for their employees, this should be after that they understand the necessity of information literacy on their success and the value added of that” (*Respondent D10*).

4.1.4. Ensuring Effective, Ethical and Legal Use of Information

Questions in this section indicate respondents’ understanding of the term plagiarism and other issues surrounding the ethical and legal use of information.

On the issue of plagiarism, respondents indicated their understanding of the term “plagiarism” as not acknowledging what you have copied 22 (81.5%), copying/stealing the work of others 21(77.8%), fair use of intellectual property 2 (7.4%). Additionally, one respondent 1 (3.7%) stated that the term “plagiarism” means “*attributing somebody's intellectual property to another one*” (*Respondent E1*). Figure 14 and Table 15 below illustrate the responses to question 16 of the survey.

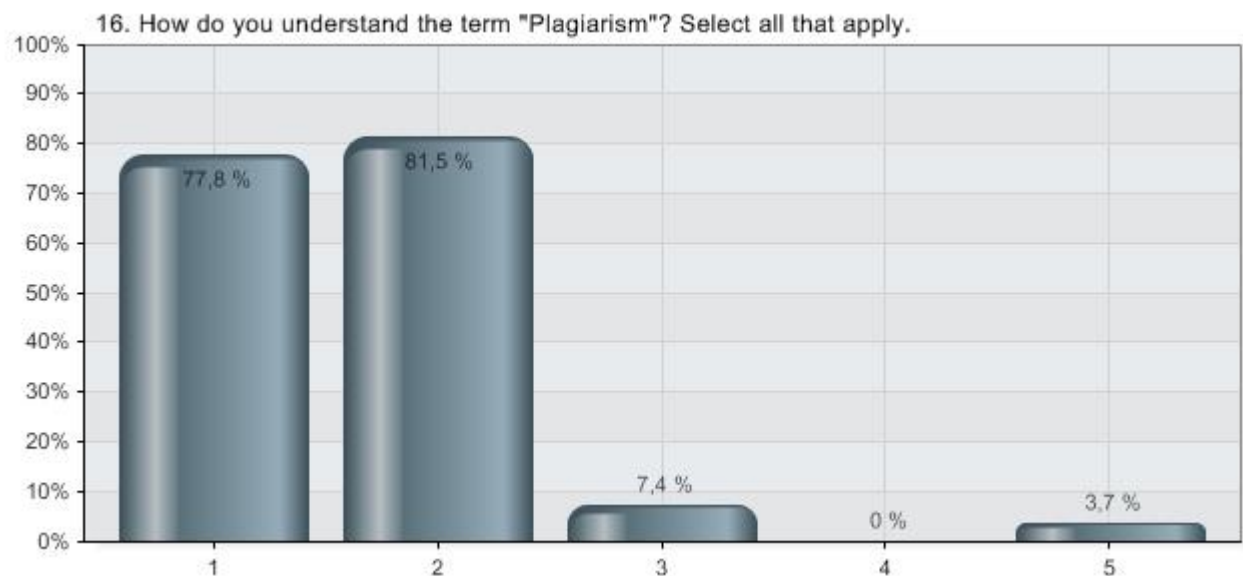


Figure 14: Understanding plagiarism, numbers (1-3) giving perceived meaning of plagiarism, see Table 15.

Table 15: Perceived meaning of plagiarism.

Alternatives	Percent	No. of Responses
1 Copying/stealing the work of others	77.8%	21
2 Not acknowledging what you have copied	81.5%	22
3 Fair use of intellectual property	7.4%	2
4 Don't understand	0.0%	0
5 Other, please specify	3.7%	1
Total number of respondents		27

In order to ensure effective, ethical, and legal use of information in their academic work or research and avoid plagiarism, majority of the respondents indicated that they quoted authors in their work 25 (92.6%), again they cited a book correctly and creating a bibliography/list of references 24 (88.9%). They also indicated that they cited a webpage correctly and understood how to avoid being a plagiarist 23 (85.2%). In addition to this, one respondent suggested that running the documents through an antiplagiarism software was necessary to make sure that all the sources were quoted or cited correctly. Figure 15 and Table 16 below illustrate the responses to question 17 of the survey.

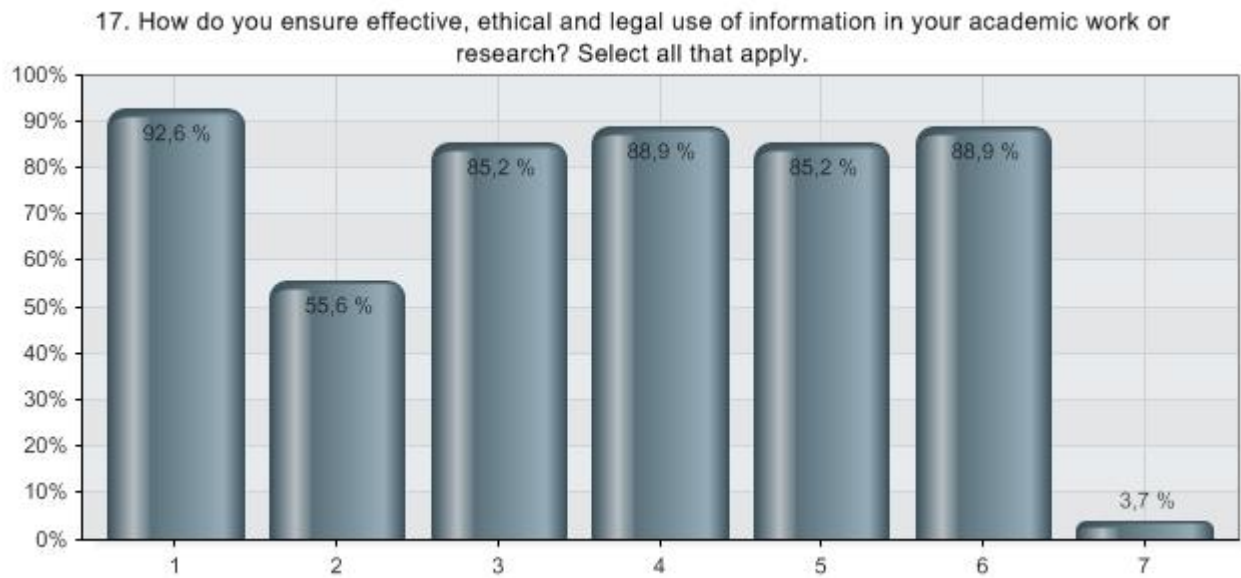


Figure 15: Making effective use of information, numbers (1-6) showing how respondents avoid plagiarism, see Table 16.

Table 16: Ways of avoiding plagiarism.

Alternatives	Percent	No. Of Responses
1 Quoting authors in my work	92.6%	25
2 Paraphrasing authors in my work	55.6%	15
3 Understanding and avoiding being a plagiarist	85.2%	23
4 Citing a book correctly	88.9%	24
5 Citing a webpage correctly	85.2%	23
6 Creating a bibliography/list of references	88.9%	24

7 Other, please specify	3.7%	1
Total number of respondents		27

4.1.5. Preferences of Information Sources

Questions on this section indicate respondents' views on information resources they use most to retrieve information for their academic work or research and difficulties they face in retrieving information.

The results on which source of information respondents used most indicated that majority of respondents preferred the internet as a source of information for their academic work or research 22(84.6%), but then some of them also use resources in the library to get information 13 (50%). They gave varied reasons for their preference of the internet as a source of information. Some of the reasons they mentioned were: access without any limitation of place and time, accessible and flexible content, it makes retrieval faster and you can access a lot of materials within a short time, it is easy to access information from any place where there is internet. Figure 16 and Table 17 below illustrate the responses to question 18 of the survey.

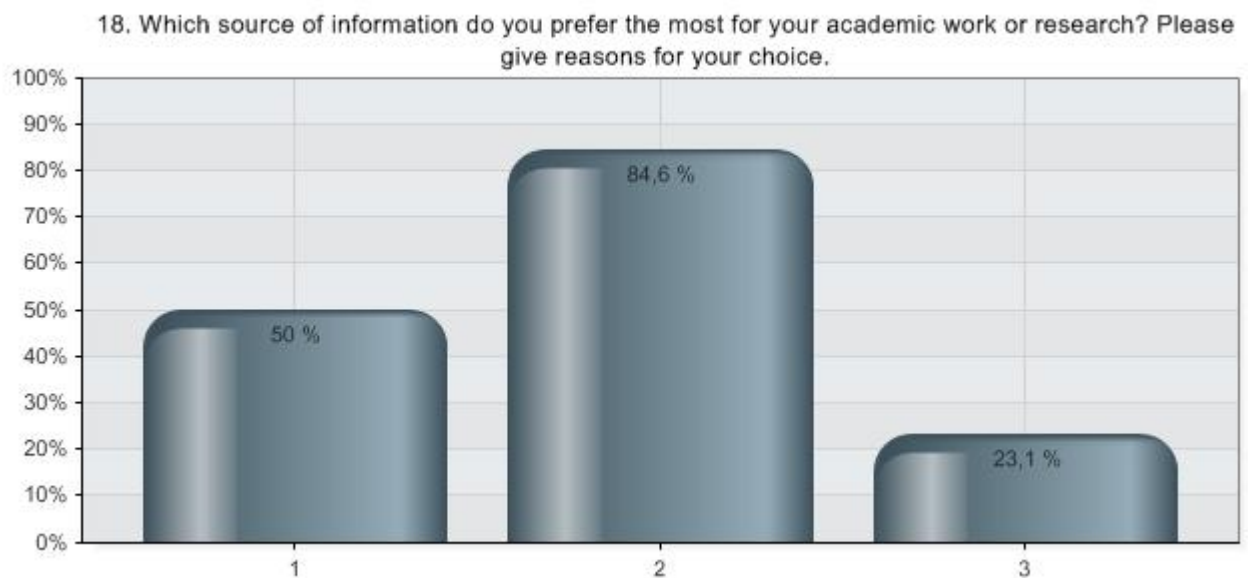


Figure 16: Responses on information source preference, numbers (1& 2) showing information source options, see Table 17.

Table 17: Information source options.

Alternatives	Percent	Value
1 Library (for books, journals, library databases etc.)	50.0%	13
2 Internet (for search engines, online databases etc.)	84.6%	22
3 Other, please specify	23.1%	6
Total number of respondents		26

The results confirmed some of the reasons respondents gave for using the internet most as a source of information. Most respondents would select one source of information over the other for the fact that they got faster and available information 19 (73.1%), and also for the fact that they got accurate and current information 18 (69.2%), another reason is large amount of relevant information 14 (53.8%). Respondents also indicated other reasons such as the source's affordability and its informative content 14 (53.8%), and also to get different views on the same subject 14 (53.8%). Figure 17 and Table 18 below illustrate the responses to question 19 of the survey.

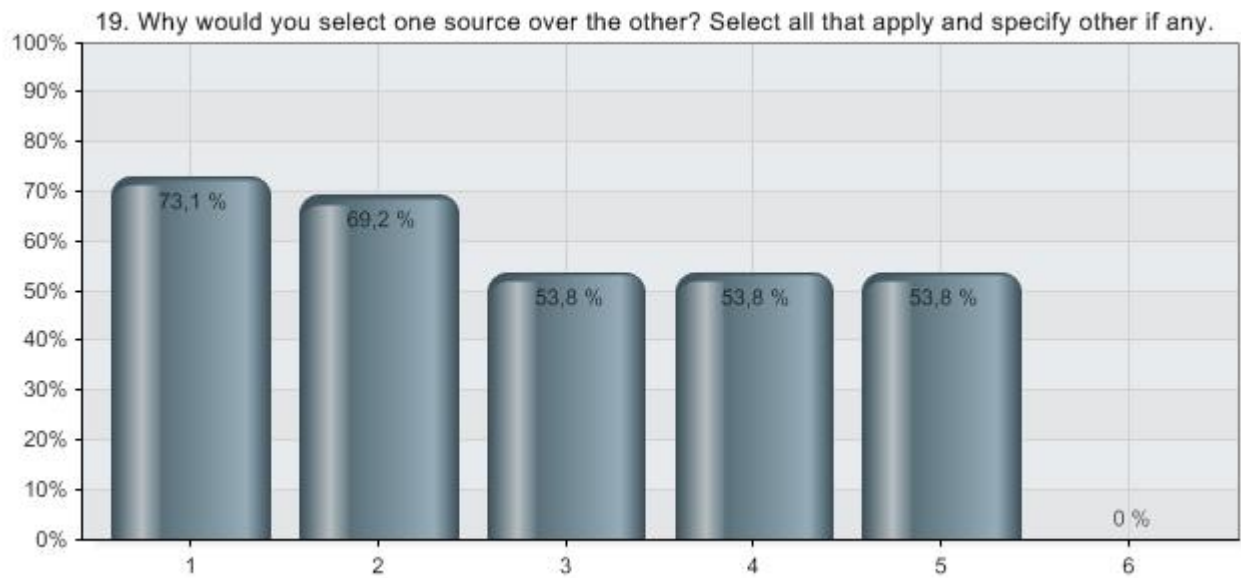


Figure 17: The reasons why respondents prefer using a particular source of information, numbers (1-5) indicating the reasons with corresponding percentages, see Table 18.

Table 18: Reasons for selecting an information source.

Alternatives	Percent	No. Of Responses
1 For faster and available information	73.1%	19
2 For accurate and current information	69.2%	18
3 For large amount of relevant information	53.8%	14
4 For its affordability and informativeness	53.8%	14
5 For different views on the same subject	53.8%	14
6 Other, please specify	0.0%	0

Total number of respondents		26
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The researcher wanted to find out which other sources of information respondents relied on apart from the internet and the library for relevant information for their academic work or research. Some of the respondents mentioned that they also got information from colleagues and friends, newspapers, Blogs (of course on Internet), archival collections as a good source of historical information, and also from professors and professional colleagues.

Other respondents mentioned talking to experts, scholars, and knowledgeable people in their field for their expert views, conference presentations, mailing lists, social network, and also through discussions. One respondent stated that “knowledgeable people in the area of interest can be a very good source of information and five minutes talk with an appropriate person can save a huge amount of time surfing the net” (*Respondent F1*).

And another respondent also agreed by stating that “personal sources of information such as professors, speakers, friends, and videos are often quite valuable to me, since I will be more likely to trust the viewpoints of those I know” (*Respondent F2*).

Others also indicated that they relied on personal experiences, first hand sources, and other information resources organizations besides the library.

On the issue of difficulties in retrieving relevant information for academic work or research, most respondents pointed out they were unable to identify concepts 12 (48%), some of the respondents added that they also lacked the knowledge of using controlled vocabulary as well as they lacked the knowledge of the principles of ethical use of information (risk of plagiarism) 9 (36%). They also mentioned the fact that they lacked the knowledge of the structure and contents of library catalogues 7(28%). In addition to these difficulties 7 (28%) of the respondents that the lack of resources from local libraries, bad policies of electronic journal databases which are making them more difficult to use, also finding required documents which the institutions have not subscribed to, unfamiliarity with the technologies sometimes, and poor metadata were also some of the difficulties they faced in retrieving relevant information for their academic work or research. Figure 18 and Table 19 below illustrate the responses to question 21 of the survey.

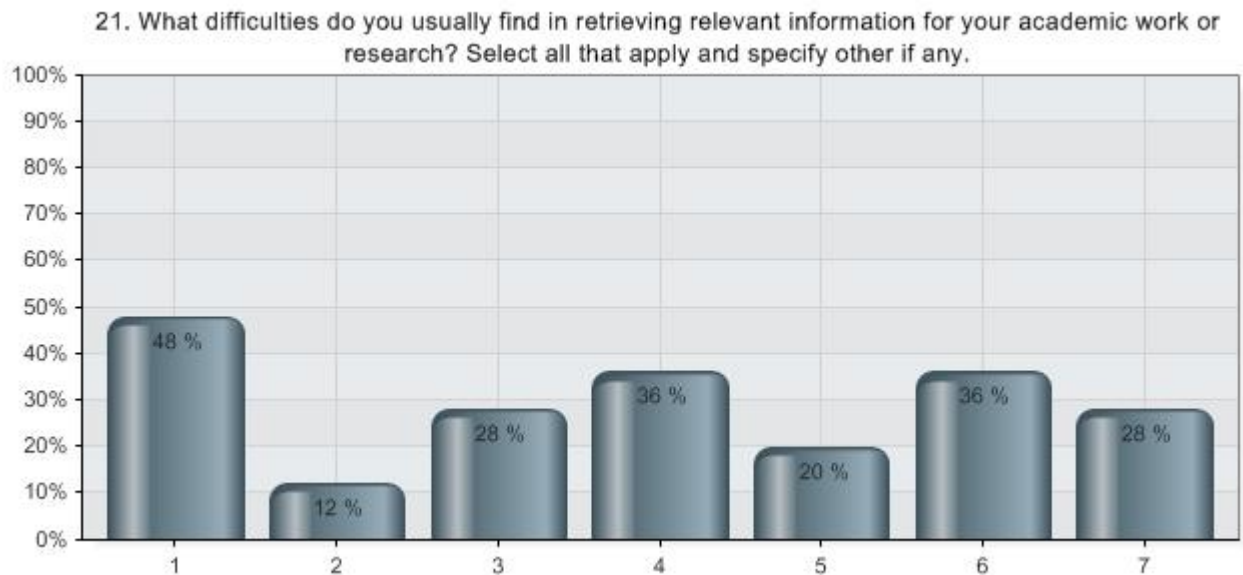


Figure 18: Respondents' indications of difficulties faced in retrieving relevant information, numbers (1-6) show the difficulties with their percentages, see Table 19.

Table 19: Difficulties in retrieving relevant information.

Alternatives	Percent	No. Of Responses
1 Inability to identify concepts	48.0%	12
2 Inability to read citations	12.0%	3
3 Lack of knowledge of the structure and contents of library catalogues	28.%	7
4 Lack of knowledge of controlled vocabulary	36.0%	9
5 Lack of knowledge of using search engines	20.0%	5
6 Lack of knowledge of the principles of ethical use of information	36.0%	9

(Risk of plagiarism)		
7 Other, please specify	28.0%	7
Total number of respondents		25

4.1.6. Demographics

Questions on this section indicate demographic details of respondents; gender, age, and academic background.

On the distribution of gender, the results from the survey indicated that respondents were equally represented in terms of gender, though no specific technique was used to arrive at that, but this could be due to the fact that one respondent out of the total respondents who completed the survey did not state the gender. That is among the respondents, 13 (50%) were female and 13 (50%) were male. Table 20 below illustrates the gender distribution of respondents.

Table 20: Gender distribution of the respondents.

Alternatives	Percent	No. Of Responses
1 Male	50.0%	13
2 Female	50.0%	13
Total number of respondents		26

The results collected on the ages of respondents showed that 17 (63%) of the respondents were between the ages of 26-33, while 5 (18.5%) were between the ages of 34-41, and 3 (11.1%) were between the ages of 18-25. Only 1 (3.7%) of respondents was between the ages

of 42-49, and another 1 (3.7%) was between the ages of 50-57. The results showed that none of the respondents was 58 years and above. Figure 19 and Table 21 below illustrates the age groups of respondents.

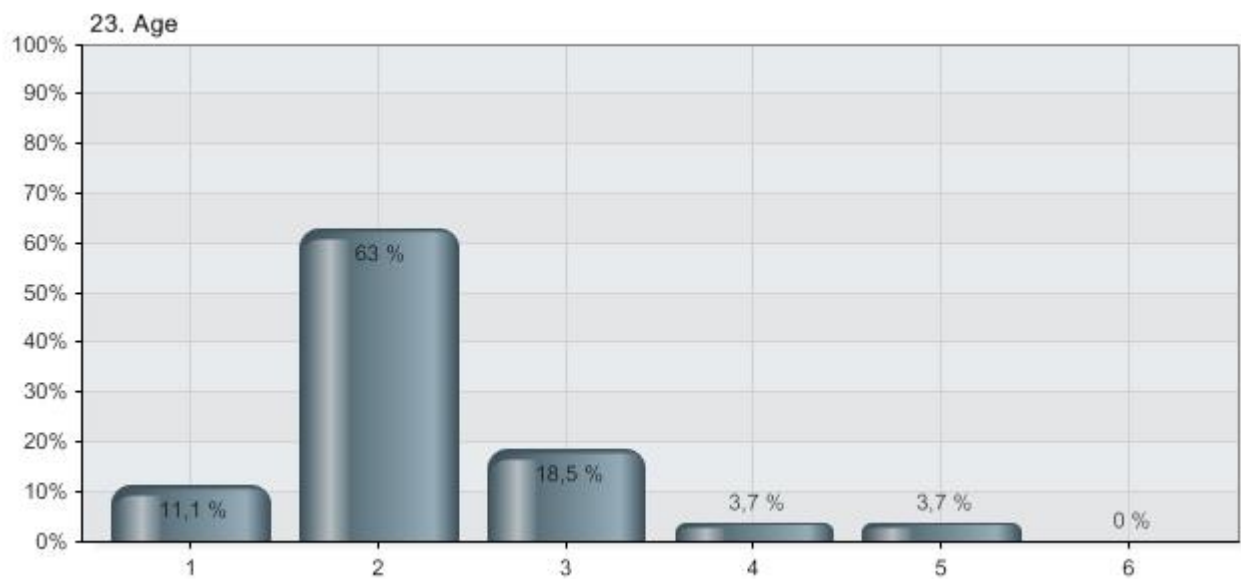


Figure 19: Respondents' ages and corresponding percentages, numbers (1-6) showing various age groups, see Table.

Table 21: Age groups of respondents.

Alternatives	Percent	No. Of Responses
1 18-25	11,1 %	3
2 26-33	63,0 %	17
3 34-41	18,5 %	5
4 42-49	3,7 %	1
5 50-57	3,7 %	1

6 58+	0,0 %	0
Total number of respondents		27

The results of the survey showed that 8 (29.6%) had a Master of Arts (MA) degree, 7 (25.9%) had a Master of Science (MSc) degree, 6 (22.2%) had other degrees namely Master of Law (ML), Master of Library and Information Science (MLIS), Bachelor in Librarianship (BL), Master of Library Science (MLS) and Bachelor in Library and Information Science (BLIS), which were not listed among the response options given. Among the rest, 5 (18.5%) had a Bachelor of Arts (BA) degree, and 4 (14.8%) had a Bachelor of Science (BSc) degree. The results from the survey also showed that none of the respondents had a Master of Philosophy (MPhil) degree, and the results also confirmed that some of the respondents were taking their second master's degree. Figure 20 and Table 22 below illustrate the educational background of respondents.

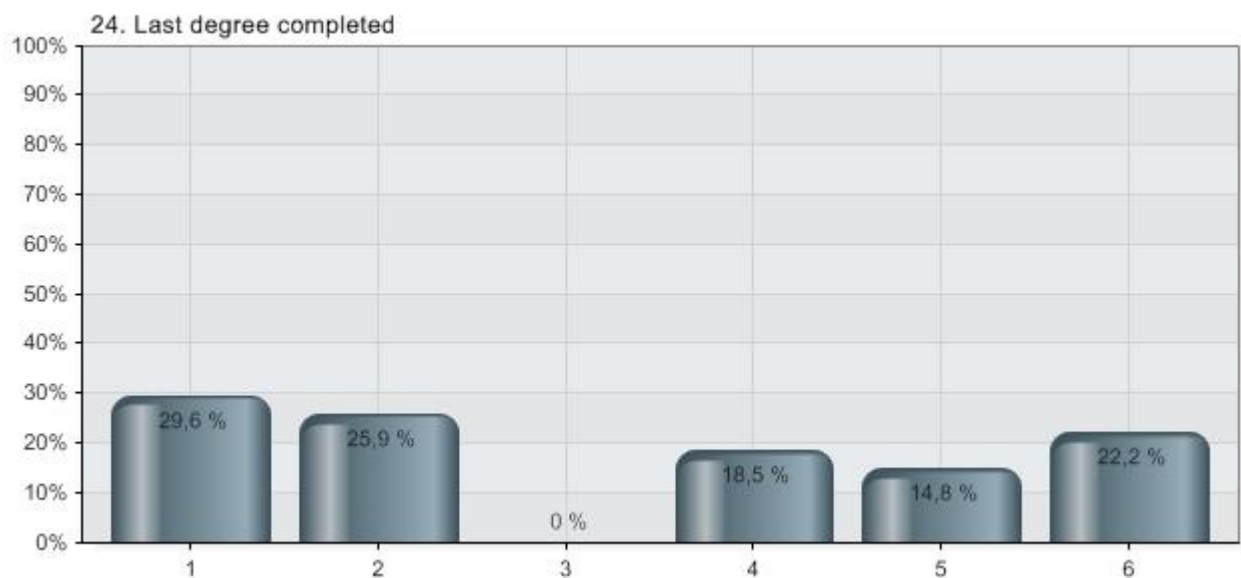


Figure 20: Respondents' educational background, numbers (1-5) indicate their last degree completed, see Table 22.

Table 22: Last degree completed.

Alternatives	Percent	No. Of Responses
1 Master of Arts	29,6 %	8
2 Master of Science	25,9 %	7
3 Master of Philosophy	0,0 %	0
4 Bachelor of Arts	18,5 %	5
5 Bachelor of Science	14,8 %	4
6 Other, please specify	22,2 %	6
Total of respondents		27

4.1.7. Comments and Suggestions from Respondents

Finally, respondents were asked to give any comments or suggestions to summarise their views on information literacy, and some of them mentioned that information literacy is very relevant and also very important for everyone considering the amount of information one has to deal with daily in school, at the workplace and for other purposes as well. One respondent admitted therefore that “Information literacy is very relevant today, with the huge amount of sources of information we encounter every day, everyone should know how to deal with them, and I think information literacy can help us with that” (*Respondents G1*).

Another respondent agreed by stating that “Information literacy should be encouraged in every discipline, not only in academic, in workplaces as well and in all aspects of life since we live in a knowledge economy where information is a very important resource for

development and achievement of goals” (*Respondent G2*).

Two other respondents concluded by confirming that “Information literacy is a basic issue that needs attention since we are living in the digital age” (*Respondent G3*), and the final remark was that “Information literacy cuts across every discipline, and as such it should be given maximum attention at all levels of education to meet the goals of a lifelong learning and information society” (*Respondent G4*).

4.2. Analysis of Interviews

The following were the findings from the face-to-face interviews conducted. Findings were presented under the same themes as the online survey questionnaire results.

4.2.1. Views and Experience of Information Literacy

In order to get the views of graduate students about information literacy, there was the need first to know their understanding of the concept or the term “information literacy”. Therefore, one aim of the interviews was to get more information on the understanding of information literacy as it was expressed by respondents in the online survey. Interviewees gave similar responses for their understanding of the concept. Some of them understood information literacy as the competency or the ability to access, evaluate, and use information effectively and efficiently to construct knowledge, but this should be preceded by the realisation of an information need. Others also understood information literacy in the context of learning, and therefore saw information literacy as acquiring the ability to learn how to learn, in other words it is how to seek for information to accomplish a given task. Other views also linked information literacy to lifelong learning, as one interviewee mentioned “information literacy is a lifetime process of being able to identify your information need and the ability to identify and organize the source of information in satisfying that need” (*Interviewee IE5*).

Interviewees were also asked their understanding about plagiarism and copyright issues in the use of information in order to find out how they made effective use of information. They gave similar views on their understanding of plagiarism. Some understood it as using someone’s intellectual property without acknowledging the person, others also mentioned that it is copying information from its original and presenting the ideas as your own without referencing the original source. Therefore, they mentioned that one has to always cite any source of information used, and also give due credit to the owner of the original idea by way

of proper citation, one interviewee stated that “plagiarism is using one’s intellectual property without giving credit to it, I normally cite or acknowledge my use of other people’s work” (*Interviewee IF6*).

4.2.2. Approach to Information Literacy Education

Interviewees were also asked their opinion on the best approach institutions should adopt in teaching information literacy and at which level of education they thought it was very convenient to introduce information literacy education. On the approach, all the interviewees suggested that information literacy should be embedded into the curriculum with collaboration between librarians and faculty to make it very effective, and students should be examined as well. In effect, one interviewee mentioned that “information literacy should be collaboratively taught by both faculty and librarians as an integrated course in the curriculum and all subjects must infuse it” (*Interviewee IF6*). And another interviewee also agreed stating that “information literacy (IL) should be part of the curriculum, implying collaboration between librarians and faculty” (*Interviewee ID4*).

4.2.3. Challenges to Information Literacy Education

On the question of whether there were challenges affecting information literacy education, interviewees answered positively and they cited the following as challenges to information literacy education; lack of awareness, not recognising the importance of the concept, at times lack of interest by both faculty and students, lack funds to implement and support information literacy programmes. They also mentioned the fact that sometimes students are not taught the right content in information literacy programmes and also the fact that information literacy teachers lack the requisite skills themselves to teach information literacy and teach it well. They further mentioned lack of collaboration between faculty and librarians and the fact that usually the information literacy courses are not academically examined and graded by way of written examinations as challenges affecting information literacy education. Again, one interviewee cited policy issues and congested curriculum, she mentioned that “absence of implementation strategies, absence of policy makers and enforcers trained in the field of information studies, and congested curriculum can be challenges to information literacy education” (*Interviewee IF6*).

Following this, interviewees were asked what could be done to improve upon the situation. They suggested that there should be the need to create awareness about the importance of information literacy education and also get all stakeholders involved in it. Again, they mentioned that more advocacies should be done for institutions, faculty, librarians, students, policy makers and other parties to recognise the importance of information literacy in this era of knowledge economy.

4.2.4. The Significance of Information Literacy Education

All the interviewees agreed that information literacy was very important in education and they also mentioned that being information literate has a lot of benefits for the person, particularly, as a graduate student, one needs to be information literate in order to be equipped with some competencies to excel in academic work and also to be able to adapt to the ever changing world of information, one interviewee summarized it as “the application of information literacy in education is very important since it gives one the competence of excelling in his or academic courses. It further provides a lifetime ability to be able to adapt to this ever changing world” (*Interviewee IE5*). Interviewees also mentioned that information literacy is very important in education and we cannot do without it because information literacy is learning how to learn and moreover education is about learning, so information literacy is the key to a successful learning. This fact was also expressed by one interviewee that “education is all about being informed or enlightened through the right information, as such information literacy is an appurtenance to education” (*Interviewee ID4*). Another interviewee also mentioned that fact that information literacy is very relevant in research and also in the workplace after school.

4.2.5. Preference of Sources of Information

Regarding sources of information they mostly used, interviewees stated that they got most of their information online (internet) from academic databases because it is easy to access relevant materials and very convenient as well. They also mentioned that they consulted library databases, and materials available in the library such as research papers and textbooks. Additionally, they relied on experts for authoritative views, and also on their colleagues for information. However, they cited issues like restrictions on access to some online databases, lack of information literacy skills, and at times lacking of search strategies, that is using the right keywords and search terms as some of the difficulties they faced in retrieving

information, one interviewee stated thus “sometimes I find difficulties formulating the right keywords and search terms to retrieve relevant information” (*Interviewee IE5*). They suggested therefore that open access should be encouraged so that information could be accessed without so much restrictions, and students should develop more interest in information literacy education.

4.2.6. Final Comments and Suggestions

Finally, interviewees were asked to give any comments or suggestions about information literacy education. They gave various comments and suggestions which in their opinion could help improve information literacy education programmes. In the first place, some interviewees mentioned that information literacy is a catalyst for learning and as such educational institutions should be encouraged and given the needed support in terms of funding and other resources to enable them to take information literacy seriously and also empower students. Others also mentioned that information literacy should be recognised as a very important concept by all stakeholders and therefore it should be given the needed attention in every discipline of life. One interviewee summarized it all as

IL is at the core of equipping one with requisite enablement for independent studies and so should impact library services greatly. Since the technology paradigm has made the library to shift from being the “gatekeeper” to being the “gateway” to information, IL has gained ascendancy and indispensability. However, the main challenges to the librarians in this regard, would then be to possess the requisite skills and knowing the best method of teaching IL for result. (*Interviewee ID4*).

4.3. Discussion of findings

The research aimed at examining graduate students’ views about information literacy in an effort to have a better understanding of how graduate students relate information literacy to their academic work or research, and also to find out which sources of information graduate students prefer and additional sources they consulted for information for their academic work or research. Following the analysis of data collected through an online survey and qualitative face-to-face interviews with selected respondents, the following discussions were made in a view of relating the findings to other studies or available information the researcher came across during the review of literature.

4.3.1. Views and Experience of Information Literacy

It was established that respondents understood information literacy mostly as finding information located in information resources 20 (74.1%) and also as ways of interacting with

the world of information 20 (74.1%) they were also familiar with popularly used information literacy standards and models, especially the ACRL's information literacy standards which also spell out some attributes of an information literate person. However, they described being information literate particularly as being able to critically analyse information – trying to reveal values 18 (66.7%) and also as finding information to form a personal standpoint 13 (48.1%). Additionally, among other information literacy elements, respondents pinpointed locating and evaluating the quality of information 15 (55.6%) and applying information to create and communicate knowledge 14 (51.9%) as the two most important information literacy elements. Meanwhile, most of the respondents rated their information literacy skills as very good and majority of them were introduced to information literacy education at the undergraduate level through basic library education or as part of curriculum, which in their opinion should have been introduced at the elementary or secondary school level to give them ample time to master information literacy skills.

On challenges affecting information literacy education, it was found out that some of the issues such as lack of interest in, and/or understanding of the concept and its importance and relevance in today's economies and societies, poor information and library infrastructure, lack of funding/financial support, lack of interest among students, and lack of interest among faculty, which respondents identified as challenges affecting information literacy education were also raised by some authors. For instance, respondents were of the opinion that at times information literacy programmes not embedded in the curriculum is a challenge to information literacy education, and the same issue was also identified as a challenge by Kinengyere (2006). She mentioned that the fact that information literacy education has not been embedded in the curriculum is a challenge and this will not give it “more seriousness” (p.339).

As a result of these perceived challenges, respondents made suggestions which in their opinion could help improve information literacy education. Their main concerns were that authorities should realise the importance of information literacy and provide enough funds to improve information infrastructure in order to facilitate information literacy education and more importantly

Integrating information literacy education in the curriculum at every level of education will be of great help (*Respondent D4*).

Another respondent also agreed by stating a similar opinion that information literacy education should be

part of the curriculum as a required and complementary course in research methods with some minimum credits (i.e. ECTS Credits) or integrate it within the research method courses (*Respondent D1*).

Many authors also agree with the integration of information literacy education into the curriculum to make it more effective as confirmed by Dadzie that “a number of authors share in the opinion that the ideal method for enabling students to develop their information literacy skills is by embedding the information literacy activity into the student’s course materials” (Dadzie 2009, p.169). Kinengyere (2006) and Cochrane (2006) also agree with the idea that information literacy education should be embedded into the curriculum. Kinengyere mentions that “IL should be included in the respective universities’ curricular so as to give it more emphasis and this will make all researchers an potential researchers and other library users realise the importance of being information literate” (Kinengyere 2006, p.340). Cochrane adds that “ideally, IL should be embedded into degree pathways and students offered the opportunity to develop their competence as they progress through their degree” (Cochrane 2006, p.113).

The issue of plagiarism was briefly tackled in order to find out how respondents understand and apply some information literacy aspects in their academic work or research. Respondents stated their understanding of the term “plagiarism” as not acknowledging what you have copied 22 (81.5%), and copying or stealing the work of others 21(77.8%). In order to ensure effective, ethical, and legal use of information in their academic work or research, in other words to avoid plagiarism, respondents indicated quoting authors in their work, citing books correctly, and also creating a bibliography or list of references.

4.3.2. The Significance of Information Literacy Education

On the issue of significance of information literacy education, it was observed that all the respondents agreed that information literacy was very important particularly in this era of knowledge economy. This finding is in agreement with what some authors like Baro and Fyneman (2008), Adeogun (2006), Dadzie (2009), Idiodi (2005) mentioned about the importance of information literacy in their various articles. Adeogun (2006) mentioned that

“the purpose of information literacy (IL) education is to help students to develop critical thinking and analytical skills which they will need for transforming information into knowledge” (p.48) and Dadzie (2009) also agrees on the importance of information literacy by stating that “information literacy has thus become one of the most vital sets of skills for the twenty first-century”, and therefore, “everyone needs IL skills to enable him/her to function adequately as a citizen of the community” (p.165)

4.3.3. Preferences of Information Sources

On the issue of sources of information respondents used most, the research found out that respondents relied mostly on the internet as their preferred source of information for academic work and research. They mentioned that they used the internet mostly because of its ease of access and use from everywhere, and also the fact it is convenient and it gives you much information within a few time. The finding also confirms findings from studies undertaken by Mittermeyer and Quirion (2003), Kerins et al. (2004), and Vezzosi (2008). Mittermeyer and Quirion (2003), found out in their study of incoming first-year undergraduate students in Quebec that many students used the internet extensively to find course-related information. Kerins et al. (2004), in another study of undergraduate engineering students “reported that the majority of the students indicated that the internet was the first source of information they used for a project, course assignment” (as cited in Baro and Fyneman, 2008, p.667). Again, Vezzosi (2008) conducted a study on Doctoral students’ information behaviour in an exploratory study at the University of Parma, Italy, and it was found out that “Doctoral students rely heavily on the internet for their research work” (p.65).

However, the research also established that besides the internet which they used most, some of the respondents still used the library resources to equally get information for their academic work or research. This finding was also confirmed in the findings of a study conducted in the University of Botswana by Fidzani (1998). In the case of Fidzani (1998), it was rather established that graduate students relied heavily on library books, textbooks and journals as sources of information used for course-work.

4.3.4. Relation to Framework

As mentioned earlier, Bruce's (1997) relational model frames information literacy into seven different ways of experiencing information-use through active and reflective engagement with the relevant information practices and the users' conceptions of information literacy produce seven categories of description, some of which are examined here in relation to respondents' views of information literacy.

For *Information Technology conception*, which associates information literacy with the use of IT to gather and communicate information, respondents expressed similar views by indicating their understanding of information literacy as "using IT for retrieval and communication" 17 (63.0%). This shows a relation between users' conceptions of information literacy and respondents' understanding of information literacy in this study.

For *Information Sources conception*, where information literacy is perceived as the knowledge of sources and the ability to access these directly or indirectly via an intermediary, respondents understood information literacy as "finding information located in information resources" 20 (74.1%), indicating that one needs to have a knowledge of various information (re)sources and the skills to access and retrieve the needed information effectively and efficiently.

With *Information Processing conception*, which describes information literacy as "executing a process" (Bruce, 1997, p. 128), where a new situation is tackled through the use of an appropriate strategy to find and use information, respondents described an information literate person as one who "initiates a process" 6 (22.2%). The nature of the process varies according to the participant of this process.

Information Control conception. Here information literacy is associated with the effective control and manipulation of information through the use of mechanical devices, memory, or IT.

For *Knowledge Construction conception*, where information literacy is perceived as "building a personal knowledge base in a new area of interest" (Bruce, 1997, p.137). Bruce stresses that this differs from the storage of information, because it involves the application of critical analysis of the information read and respondents expressed similar views by describing an information literate person as one who "finds information to form a standpoint" 13 (48.1%), as one who "critically analyses information – trying to reveal values" 18 (66.7%), and as one who "works with knowledge to gain new insights" 12 (44.4%). Respondents also indicated

“applying information to create and communicate knowledge” 14 (51.9%) as one of the most important information literacy elements.

With *Knowledge Extension conception*, which envisages the application of knowledge and personal perspectives that lead to new insights, respondents mentioned again that an information literate person “works with knowledge to gain new insights” 12 (44.4). One other important information literacy element which respondents mentioned as “applying information to create and communicate knowledge” 14 (51.9%) can equally be related with the *Knowledge Extension conception*.

Wisdom conception, which is associated with the wise and ethical use of information considered in a wider historical or cultural context. In addition, the information here undergoes “a process of reflection which is part of the experience of effective information use” (Bruce, 1997, p. 148). Here, respondents indicated “making effective and ethical use of information” as an important information literacy element, and again respondents mentioned that information literacy helps in “understanding and acknowledging cultural, ethical, economic, legal, and social issues surrounding the use of information” 9 (33.3%). Respondents’ understanding of plagiarism and copyright issues in the use of information also indicated the relation between *Wisdom conception* and respondents’ views on ensuring the effective, ethical, and legal use of information. Respondents indicated that in order to ensure effective, ethical, and legal use of information, they quoted or paraphrased authors in their work, cited a book or a webpage correctly, and created a bibliography or list of references in their academic work or research.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

This final chapter of the thesis presents the conclusions about the findings of this research in relation to the research questions and recommendations are made in relation to the findings as well as on areas of further research.

5.1. Conclusions to the Research Questions

This section provides a summary of the findings in relation to the research questions this study sought to address.

Research question 1: How do graduate students perceive information literacy?

It was established that respondents understood information literacy mostly as finding information located in information resources and also as ways of interacting with the world of information. Some of them understood information literacy as the competency or the ability to access, evaluate, and use information effectively and efficiently to construct knowledge, but this should be preceded by the realisation of an information need. Others also understood information literacy in the context of learning, and therefore saw information literacy as acquiring the ability to learn how to learn, in other words it is how to seek for information to accomplish a given task. Respondents were also familiar with popularly used information literacy standards and models, especially the ACRL's information literacy standards which also spell out some attributes of an information literate person. However, they described being information literate particularly as being able to critically analyse information – trying to reveal values and also as finding information to form a personal standpoint. Additionally, among other information literacy elements, respondents pinpointed locating and evaluating the quality of information and applying information to create and communicate knowledge as the two most important information literacy elements. Meanwhile, most of the respondents rated their information literacy skills as very good and majority of them were introduced to information literacy education at the undergraduate level through basic library education or as part of curriculum, which in their opinion should have been introduced at the elementary or secondary school level to give them ample time to master information literacy skills.

On challenges affecting information literacy education, some of the issues respondents raised were lack of interest in, and/or understanding of the concept and its importance and relevance in today's economies and societies, poor information and library infrastructure, lack of

funding/financial support, lack of interest among students, and lack of interest among faculty, lack of awareness, not recognising the importance of the concept, lack funds to implement and support information literacy programmes. It was therefore suggested that there should be the need to create awareness about the importance of information literacy education and also get all stakeholders involved in it. Again, it was mentioned that more advocacies should be done for institutions, faculty, librarians, students, policy makers and other parties to recognise the importance of information literacy in this era of knowledge economy.

On the approach to information literacy education, respondents suggested that information literacy should be embedded into the curriculum with collaboration between librarians and faculty to make it very effective, and students should be examined as well. In effect, they mentioned that information literacy should be collaboratively taught by both faculty and librarians as an integrated course in the curriculum and all subjects must infuse it, in other words information literacy (IL) should be part of the curriculum, implying collaboration between librarians and faculty.

Research question 2: What opinions do graduate students have about the significance of information literacy education and training?

On the issue of significance of information literacy education, it was observed that all the respondents agreed that information literacy was very important particularly in this era of knowledge economy. They mentioned that information literacy was very relevant and also very important for everyone considering the amount of information one has to deal with daily in school, at the workplace and for other purposes as well. Information literacy should therefore be encouraged in every discipline, not only in academic, in workplaces as well and in all aspects of life since we live in a knowledge economy where information is a very important resource for development and achievement of goals. Information literacy cuts across every discipline, and as such it should be given maximum attention at all levels of education to meet the goals of a lifelong learning and information society.

Research question 3: Which kind of information sources are used by graduate students and why?

On the issue of sources of information respondents used most, the study found out that respondents relied mostly on the internet as their preferred source of information for

academic work and research. They mentioned that they used the internet mostly because of its ease of access and use from everywhere, and also the fact it is convenient and it gives you much information within a few time. However, the study also established that besides the internet which they used most, some of the respondents still used the library resources to equally get information for their academic work or research.

Additionally, the study found out that respondents also relied on experts for authoritative views, and also on their colleagues for information. However, they cited issues like restrictions on access to some online databases, lack of information literacy skills, and at times lack of search strategies, that is using the right keywords and search terms as some of the difficulties they faced in retrieving information. They suggested therefore that open access should be encouraged so that information could be accessed without so much restrictions, and students should develop more interest in information literacy education.

5.2. Recommendations

In the first place, it is important to mention that information literacy is a catalyst for learning and as such educational institutions should be encouraged and given the needed support in terms of funding and other resources to enable them to take information literacy seriously and also empower students. An important task for librarians and other educators would be to help students improve their ability to seek and use information by developing appropriate methods for teaching about information literacy.

The following recommendations are made for further research:

- More longitudinal investigations on different groups of students' perceived views on the importance of information literacy in different stages of research would be worthwhile.
- Using a much bigger sample size is recommended for these studies, so that results can be generalized.
- It would also be useful to repeat this study with research students who are doing a PhD course in order to see whether this would generate similar or different results from this study, which used DILL master students as key respondents.

5.3. Conclusion

The aim of this study was to examine graduate students' views and experiences of information literacy in an effort to have a better understanding of how graduate students relate information literacy to their academic work or research, and also to find out which sources of information graduate students prefer and additional sources they consulted for information for their academic work or research. In summary, this study was organised into five chapters.

Chapter one covered the main introduction, background to the research, the research problem, research objectives and research questions, justification for the research, followed by the methodology, definitions of basic terms used in the research, the delimitations of scope of the research, outline of the thesis, and a short conclusion of the salient points raised in the chapter.

Chapter two covered the literature reviewed for the research, giving an overview of information literacy relevant for this study.

Chapter three covered the methodology with all the related aspects, and also described both the theoretical framework and theoretical perspective for the research. It also included the sampling strategy and the techniques used. The research design, area of study, data collections methods, research instruments, a brief description of data analysis and presentation, pilot study, and research limitations were also covered in this chapter.

Chapter four covered the data analysis as well as the presentation and discussion of findings and also related some of the findings to the framework.

The final chapter presented the conclusion in relation to the research questions of this study and recommendations were also given.

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Appendices:

Appendix 1: Online Survey Questionnaire

GRADUATE STUDENTS' VIEWS ABOUT INFORMATION LITERACY.

THIS RESEARCH IS EXAMINING GRADUATE STUDENTS' VIEWS ABOUT INFORMATION LITERACY.

I WILL BE VERY GRATEFUL FOR YOUR CONSENT TO PARTICIPATE IN THIS BRIEF SURVEY AIMED AT COLLECTING INFORMATION ON THE ABOVE TOPIC FOR MY MASTER THESIS.

BE ASSURED THAT EVERY INFORMATION PROVIDED WILL BE TREATED WITH MAXIMUM CONFIDENTIALITY IN ACCORDANCE WITH RULES AND REGULATIONS GOVERNING ETHICAL ISSUES IN RESEARCH.

THANK YOU.

DANIEL WILFRED OWARE
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	61279552	0	True		

How do you understand the term "Information Literacy?" Select all that apply.

- ☐ Finding information located in information resources
 - ☐ Using IT for retrieval and communication
 - ☐ A learning concept
 - ☐ A set of skills
 - ☐ Ways of interacting with the world of information
 - ☐ Don't understand
 - ☐ Other, please specify
-

Which of the following Information Literacy standards and/or models are you familiar with? Select all that apply.

- ☐ ALA standards
 - ☐ ANZIIL standards
 - ☐ CAUL standards
 - ☐ Seven Faces
 - ☐ Big Six
 - ☐ All
 - ☐ Other, please specify
-

Which of the following best describes an "information literate" person, someone who? Select all that apply.

- ☐ Finds information to form a personal standpoint
- ☐ Critically analyses information - trying to reveal values
- ☐ Has acquired mental models of information systems
- ☐ Initiates a process
- ☐ Works with knowledge to gain new insights
- ☐ All
- ☐ Other, please specify

Which of the following Information Literacy element(s) do you think is/are the most important? Select all that apply.

- ☐ Recognising information needs
 - ☐ Locating and evaluating the quality of information
 - ☐ Storing and retrieving information
 - ☐ Making effective and ethical use of information
 - ☐ Applying information to create and communicate knowledge
 - ☐ All
 - ☐ Other, please specify
-

Do you think being "information literate" can contribute meaningfully to your academic work or research? Please give reasons for your answer.

- ☐ Yes
 - ☐ No
 - ☐ Other, please specify
-

Do you think deficiency in Information Literacy skills can affect your academic work or research? Please give reasons for your answer.

- ☐ Yes
 - ☐ No
 - ☐ Other, please specify
-

Do you think Information Literacy education and training courses should be included in graduate programs? Please give reasons for your answer.

- ☐ Yes
 - ☐ No
 - ☐ Other, please specify
-

How helpful has Information Literacy been in your academic work or research?

- ☐ Extremely helpful

- ☒ Very helpful
 - ☐ Somewhat helpful
 - ☐ Not very helpful
 - ☐ Not all helpful
-

In which way(s) was Information Literacy helpful in your academic work or research? Select all that apply and specify others if any.

- ☐ Recognising my information needs
 - ☐ Finding the needed information effectively and efficiently
 - ☐ Evaluating critically both the information and the seeking process
 - ☐ Managing the information collected
 - ☐ Applying prior or new information to construct new concepts and understandings
 - ☐ Understanding and acknowledging cultural, ethical, economic, legal, and social issues surrounding the use of information
 - ☐ All
 - ☐ Other, please specify
-

How do you rate your Information Literacy skills?

- ☐ Excellent
 - ☐ Very Good
 - ☒ Good
 - ☐ Average
 - ☐ Poor
-

At which level of your studies were you introduced to Information Literacy education and training courses? Please specify any other.

- ☐ Elementary school level
- ☐ Secondary school level
- ☐ Undergraduate level
- ☐ Master's level
- ☐ Other, please specify

How do you understand the term "Plagiarism"? Select all that apply.

- ☐ Copying/stealing the work of others
 - ☐ Not acknowledging what you have copied
 - ☐ Fair use of intellectual property
 - ☐ Don't understand
 - ☐ Other, please specify
-

How do you ensure effective, ethical and legal use of information in your academic work or research? Select all that apply.

- ☐ Quoting authors in my work
 - ☐ Paraphrasing authors in my work
 - ☐ Understanding and avoiding being a plagiarist
 - ☐ Citing a book correctly
 - ☐ Citing a webpage correctly
 - ☐ Creating a bibliography/list of references
 - ☐ Other, please specify
-

Which source of information do you prefer the most for your academic work or research? Please give reasons for your choice.

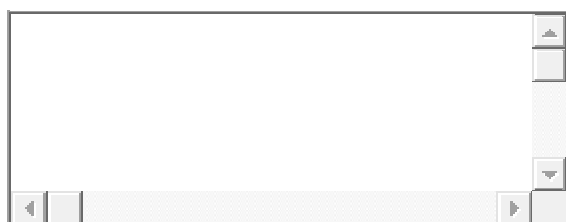
- ☐ Library (for books, journals, library databases etc.)
 - ☐ Internet (for search engines, online databases etc.)
 - ☐ Other, please specify
-

Why would you select one source over the other? Select all that apply and specify other if any.

- ☐ For faster and available information
- ☐ For accurate and current information
- ☐ For large amount of relevant information
- ☐ For its affordability and informativeness

- ☐ For different views on the same subject
- ☐ Other, please specify
-

Which other sources of information do you use apart from the internet and the library? and why?



What difficulties do you usually find in retrieving relevant information for your academic work or research? Select all that apply and specify other if any.

- ☐ Inability to identify concepts
- ☐ Inability to read citations
- ☐ Lack of knowledge of the structure and contents of library catalogues
- ☐ Lack of knowledge of controlled vocabulary
- ☐ Lack of knowledge of using search engines
- ☐ Lack of knowledge of the principles of ethical use of information (Risk of plagiarism)
- ☐ Other, please specify
-

Gender

- ☒ Male ☐ Female
-

Age

☐ 18 - 25

☒ 26 - 33

34 – 41

42 – 49

50 – 57

58 +

Last degree completed

- ☐ Master of Arts
- ☐ Master of Science
- ☐ Master of Philosophy
- ☐ Bachelor of Arts
- ☐ Bachelor of Science

Comments and Suggestions: Thank you very much for completing this survey. If you have any additional comments or suggestions you would like to make about Information Literacy, please use the space below.

Appendix 2: Interview Questions

Graduate students' views about information literacy

This is a short interview to investigate graduate students views and experiences about information literacy.

Thank you for your participation.

1. What do you understand by “information literacy”?
2. What is your opinion about information literacy’s relevance in education?
3. When do you think information literacy education should be introduced in education?
4. How do you want information literacy to be taught, as a separate course (stand alone) or as part of curriculum? And who should have the responsibility of teaching it (IL), librarians or faculty?
5. What challenges do you think can hinder information literacy education? And what could be done to improve it?
6. What do you think are the benefits of being “information literate” as a graduate student?
7. Which source of information do you use most for your academic work or research? And why?
8. Which other sources of information do you rely on for information apart from the internet and the library? And why?
9. What difficulties do you find in retrieving relevant information for your academic work or research?
10. Do you think these difficulties could be related to the lack or the level of competency in information literacy?
11. What do you understand by “plagiarism” and what do you do to avoid plagiarism and copyright issues in the use of information?
12. What is your final comment or suggestion regarding information literacy education?

Appendix 3: Pilot Study Response Log

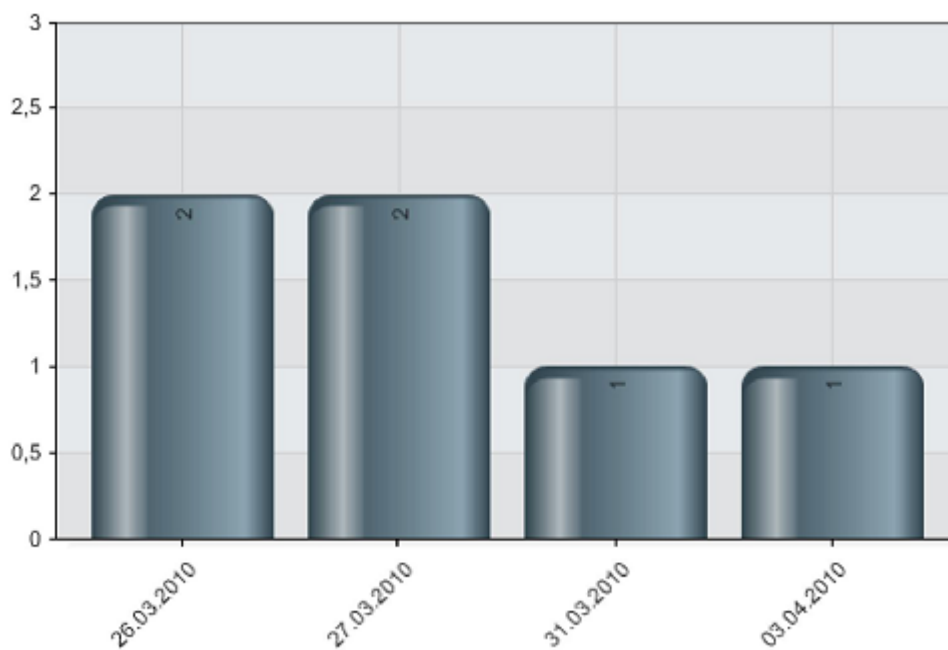
Total number of Responses: 6 (6 unique respondents)

6 of 9 e-mail invitees has generated 6 responses.

0 other respondents have created 0 responses (without following the e-mail link).

3 invitee(s) used exclude-link in e-mail invitation

/w EPDw ULLTE3M



Appendix 4: Online Survey Response Log

Total number of Responses: 27 (27 unique respondents)
27 of 49 e-mail invitees has generated 27 responses.
0 other respondents have created 0 responses (without following the e-mail link).

